

AMERICAN CARPENTER AND BUILDER



THE WORLD'S GREATEST BUILDING PAPER

Special Features This Month

Building Plans

Bungalow and House Designs

Village Bank and Store Building

Small Cold Storage Plants

Practical Carpentry

Methods of Rapid Estimating

Tile Veneer for Frame Buildings

Bed-Room Furniture—Hand Made

Modern Methods

Principles of Heat Engineering

Modern Builders' Hardware

Cement Building Construction

\$75.00

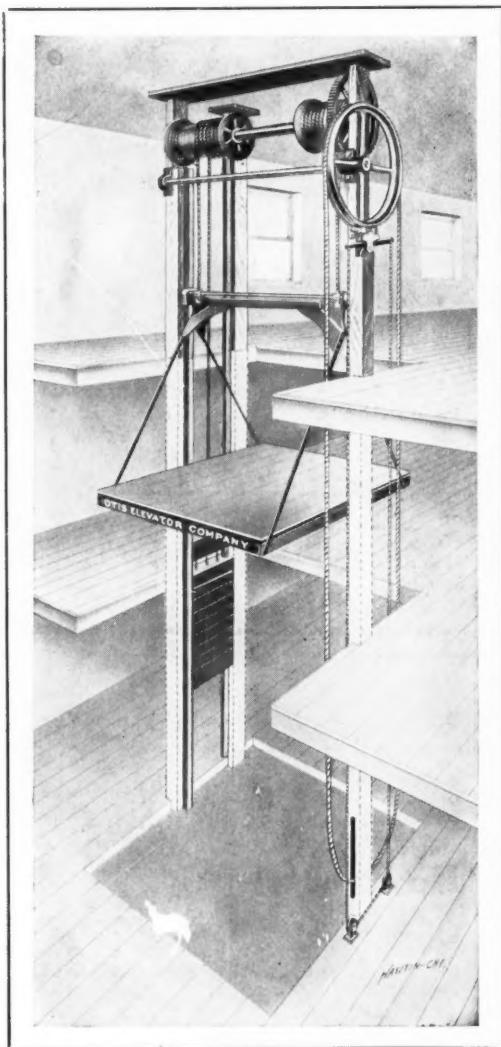
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DO YOU NEED AN ELEVATOR?

ANNOUNCEMENT AND SPECIAL OFFER

THE
HAND-POWER
ELEVATOR
SHOWN
IN THIS
ILLUSTRATION
IS OUR
NEWLY PERFECTED
STEEL FRAME
TYPE

PRICE
IS F. O. B.
MOLINE
AND
INCLUDES
ALL
MATERIAL
LISTED
IN
SPECIFICATION
HEREWITH



SPECIFICATION (SIZE 4A)

WINDING MACHINE

CAST IRON DRUMS
STEEL SHAFT
ROLLER BEARINGS
GEARING
ROPE OR PULL WHEEL
BRAKE

PLATFORM - 4'X5'

STEEL FRAME
SAFETY DEVICE
CAST IRON GUIDE SHOES

CABLES

TWO $\frac{1}{2}$ " IRON LIFTING
ONE $\frac{1}{2}$ " IRON WEIGHT
ONE $1\frac{1}{2}$ " MANILA HAND
ROPE
ONE $\frac{3}{8}$ " BRAKE ROPE

COUNTERWEIGHTS

200 LBS. IN EXCESS OF
CAR

GUIDE STRIPS

SUPPORTS

FOR WINDING MACHINE

DRAWINGS

FOR SETTING UP

CAPACITY 1500 LBS. FOR 2 STORIES AND BASEMENT (OR LESS)

ADDRESS

OTIS ELEVATOR COMPANY

FIRST AVENUE

MOLINE, ILLINOIS

WE MANUFACTURE A COMPLETE LINE OF ELEVATORS & DUMB-WAITERS

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

THE "LITTLE SHAVER" FLOOR SCRAPER

Sold to You at **FACTORY PRICES**

It will pay you to write us this month, as we are positively selling at factory prices

We are going to move five hundred scrapers the next few months and your inquiry at this time will not only save you money, but get you the best floor scraper on the market. Write us.

**INTER-STATE EQUIPMENT
& ENGINEERING CO.**

OLD COLONY BLDG.

CHICAGO, ILL.

Write Us
Now—
Don't Wait



The Floor Scraper

THAT'S ABSOLUTELY PERFECT

Of all the floor scrapers on the market not one can be quite as good as the Star, because no other embraces such durable features.

There's practically nothing about it to wear out. Consider the benefit obtained by the new mechanical principle.

The principle that means better work and quicker.

The Star does **clean** work. A patented Ball and Socket device allows the blade to be set diagonally at any angle. This gives a shearing cut to the machine. It means a finished floor **free from planer marks and "waves."** It works the same on old floors as it does on new.

Star Scraper Co. - Elkhart, Ind.

**Five
Days
Free Trial**

As a duty to yourselves you are asked to test this machine before you spend a cent on floor scrapers. A postal stating you will use the star for five days brings one to your door. We want you to be the judge of the best floor scraper. We want you to be thoroughly convinced of Star superiority.

We pay the Freight

Particular literature on request



THE FOX FLOOR SCRAPER

It Will Save You Money

The Fox Floor Scraper Costs Some Money—But It Saves the Salaries of Several Men, So That It's Original Cost Quickly Disappears.



Scrape Up a
Few Dollars
for Yourself

Buy a **FOX FLOOR SCRAPER**



**The Simplest
and Best Device
for Perfect Floor
Scraping.**

Money Pays Dividends



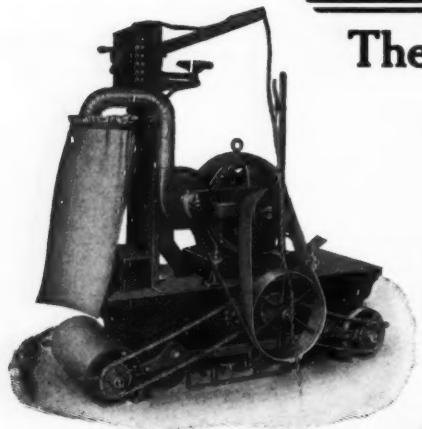
REGISTERED

The handiest wood scraping device on the market. Body of tool slides on the floor, insuring a uniform cut, blade is held by a clamp and can be adjusted or reversed in a second's time. Unexcelled for any kind of wood scraping. Never jumps or leaves waves. Every carpenter needs this tool. Price of Fox Cabinet Scraper, \$1.25.

Ask your dealer to order it for you, or we will ship on receipt of price.

FOX MFG. CO., 346 Broadway, MILWAUKEE, WIS.

**WRITE US BEFORE
BUYING**



The American Floor Surfacing Machine

Does the Work of 20 Men

BETTER

QUICKER

CHEAPER

The only machine whose work is specified by architects and meets the requirements of contractors and owners, giving a level, smooth, sand-papered finish, that harmonizes with the balance of the interior wood work.

It has surfaced and polished millions of square feet on every kind of floors, from common pine to the finest parquet, from bowling alleys to sky scrapers. It is self-propelling, no pushing or pulling, no blades to dull or sharpen. Used and indorsed by leading contractors everywhere. Big money in floor surfacing as a business, one machine earned over \$1850.00 in seven weeks. Guaranteed and sold on its merits.

Write for our New Booklet. "Surfacing Floors as a business"

The American Floor Surfacing Machine Company
TOLEDO, OHIO

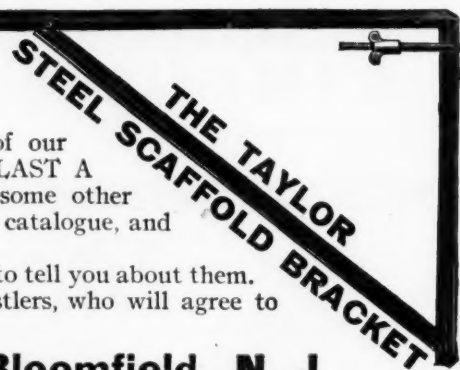
With a Man's Life at Stake Does it Pay to Take Chances?

Use brackets that are **ABSOLUTELY SAFE**—a pair of our smallest ones carry a ton weight, without even spring. They **LAST A LIFETIME**, and what is more, they are **CHEAP**, there are some other features, too, you will find well worth investigating. Write for catalogue, and special trial offer.

Our **SHINGLE BRACKETS** surprisingly strong—we'd like to tell you about them.

Agents Wanted.—We have a first class proposition for hustlers, who will agree to canvass thoroughly.

JAMES L. TAYLOR MFC. CO., Bloomfield, N. J.



LATEST IMPROVED ALL IRON SWING CUT-OFF SAW

alone of its kind

Properly
Counter-
Balanced

**Adjustable
Hanger**

With Six Inch Adjustment

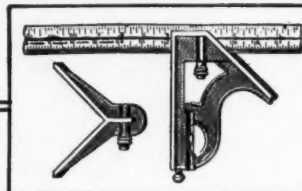
**CAN BE HUNG
ANYWHERE**

On the Floor
Under the Floor
On the Wall

With same ease of operation

Write for **FREE** Catalog
of our complete line.

LOVELL MACHINE WORKS, Gardner, Mass.



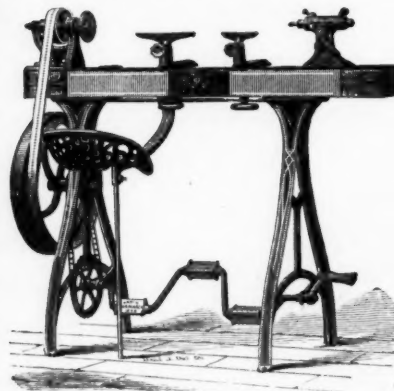
STARRETT

COMBINATION SQUARE

THE ORIGINAL : : THE MUCH IMITATED

Send for free Catalogue No. 186, of Fine Tools for all kinds of mechanics.

The L. S. STARRETT CO., Athol, Mass., U. S. A.



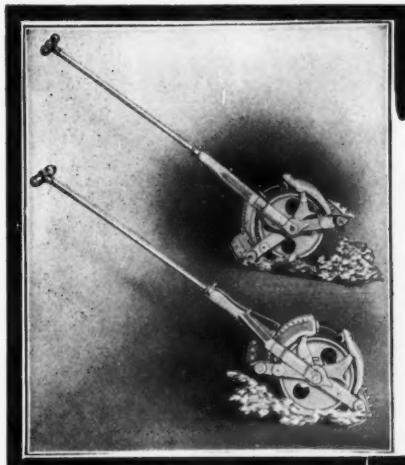
COMPLETE OUTFIT

Hand and Foot-Power
MACHINERY

Our No. 3 Wood Turning Lathe can be speeded from 1,000 to 2,000 revolutions a minute with perfect ease. Stopped or reversed at will of operator.

Write for Particulars

W. F. & Jno. Barnes Co. 74 RUBY ST.,
Rockford, Ill.



We Cannot Guarantee

to Fill Orders Until After October Fifteenth

So extensive have been the orders which we have received, as a result of carpenters seeing the Weber at the Fall fairs, that we are away behind in our shipments. The practical men who have seen the Weber have recognized its worth, and we have a tremendous number of orders on hand. The best we can do on future orders, for the present, will be to fill them in rotation as received.

However, we are working at full capacity in the Floor Scraper Department to catch up, and if you are interested in the Weber, we will be glad to take care of your order as soon as we can. We expect to have several hundred machines out about the middle of October. Send for a copy of our booklet and particulars of our free trial offer, stating how many days' trial you require, and you will be looked after just as soon as possible.

WEBER MANUFACTURING COMPANY
670 Seventy-First Avenue, WEST ALLIS, WISCONSIN



This device is the most perfect floor scraper sharpener made. It can be used on the Weber without removing blades from machine and requires no skill to keep perfect edge on blades. With it anyone can sharpen a blade quicker and better than can an expert in the old way.

FAR AHEAD for Smooth, easy work and holding edge will be YOUR VERDICT ON TRYING

CHAPLIN'S IMPROVED PLANES

Patented Feb. 14, 1899; Oct. 30, 1900; Dec. 24, 1902

We invite the
Severest
Comparative
Tests



We want you to have a copy of our booklet

"A 'Plane' Talk About a Good Plane!"

We want you to have a copy, for it is a booklet you really need in your business.

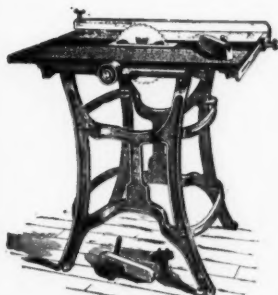
We'll gladly send you this booklet with our compliments, promptly upon receipt of your request.

Tower & Lyon Company, 95 Chambers Street, New York



"Victor" Scroll Saw "Diamond" Mortiser

ONE MAN with one of these machines will do the work of four to six men using hand tools; will do it easier, will do it better.



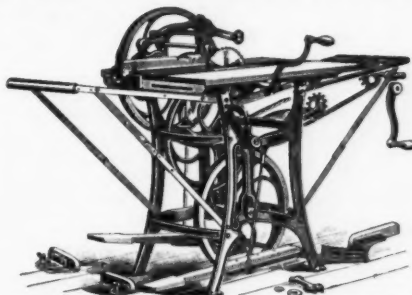
No. 8 "Union" Power Saw

FOOT, HAND AND POWER

Wood-Working Machinery

For Carpenters, Builders, Cabinet-Makers, and Other Wood-Workers

BUILT FOR HARD WORK, ACCURATE WORK AND LONG SERVICE



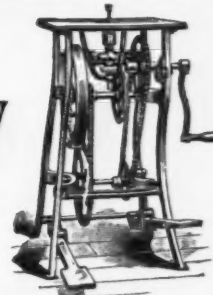
"Union" Combination Self-Feed-Rip and Cross-Cut Saw

Enterprising mechanics are quick to see the superior merits of our machines. It will pay you to investigate these advantages.

SEND FOR CATALOG "A"

The Seneca Falls Manufacturing Co.

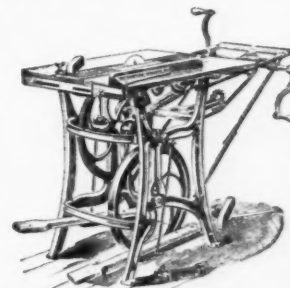
218 Water Street, Seneca Falls, N. Y., U. S. A.



"Rex" Moulder

WE GUARANTEE each machine to be thoroughly practical and accurate. Machines sent on trial, and if not found entirely satisfactory, may be returned at our expense.

(96)



No. 6 "Union" Combination Saw

GRILLES COLUMNS AND CONSOLS

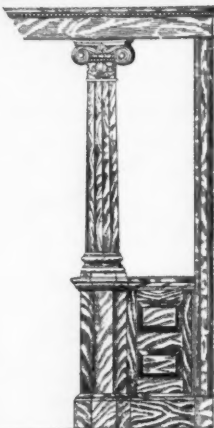
In quality and price our work is not surpassed.

You will make no mistake in writing us before ordering elsewhere.

**Send for 48 Page
Catalog No. 15**

It contains many fine designs of modern Grilles, Columns and Consols.

Illustration at right shows half-section of Column design No. 552.



Northwestern Grille Works

CHRISTENSON BROS., Props. 1452 Milwaukee Ave., Chicago

BUILDERS OF CATALOGS

From The Foundation To The Last Brick

We are experts in producing designs, illustrations, zinc etchings, half tones and color plates, for all advertising purposes.

We print folders, circulars, booklets and catalogues.

In fact, we handle your advertising from start to finish.

You do yourself an injustice by not conferring with us on your next order for engraving and printing.

Write for "Graven Message"

Dearborn Engraving Company
ENGRAVERS PRINTERS

1322 Wabash Avenue, Chicago, Ill.

Books on Estimating

Estimating Frame and Brick Houses

This book tells how to estimate, step by step, the cost of labor and materials necessary in building a frame or brick house from the excavation for foundation through the various processes up to painting. Simple and practical 224 pages. \$1.00.

Estimators Price Book and Pocket Companion

This book gives the contractor and builder a handy reference book for the prices of all kinds of building material. It lists in systematic form all items which make up a complete builder's estimate. Approximate prices are given with a blank column in which to mark your correct local prices. This book will be quite a time-saver. By I. P. Hicks. 172 pages, pocket size. \$1.00.

Builders' Guide

An easy practical system of estimating materials and labor for contractors, carpenters and builders. Gives the average day's work that can be performed by various building mechanics, and the average rates on which to figure in almost all details of building construction. By I. P. Hicks. 160 pages. \$1.00.

Estimating

A practical system of estimating, taking up each successive step in detail and covering all the important points in building construction. As a practical example a complete plan of a house is given, and an estimate worked out from this. By Edward Nichols. 140 pages. \$1.00.

Contracts and Specifications

A practical working guide of forms for the contractor, architect and owner. The duties and responsibilities of each are fully explained. Forms of public and private specifications, contracts, etc., are given. By James C. Plant. 130 pages. \$1.00.

The Building Estimator

This book covers practically the entire field of building construction from small buildings up to large hospitals, office buildings, machine shops, etc. Photographs of the various buildings are given to show the style of building on which the facts are based. Treats of concrete work, steel construction, etc. One of the best books on the subject. By William Arthur. 184 pages. \$1.50.

How to Measure Up Woodwork for Buildings

Giving reliable directions to enable builders to measure up the quantities of woodwork for brick or frame houses. By Owen B. Maginnis. 79 pages. 50 cents.

The above books are well known as trustworthy guides. We recommend them. Any book sent post-paid on receipt of price. Money refunded if not satisfactory. : : : : : : : :

Industrial Publication Co.

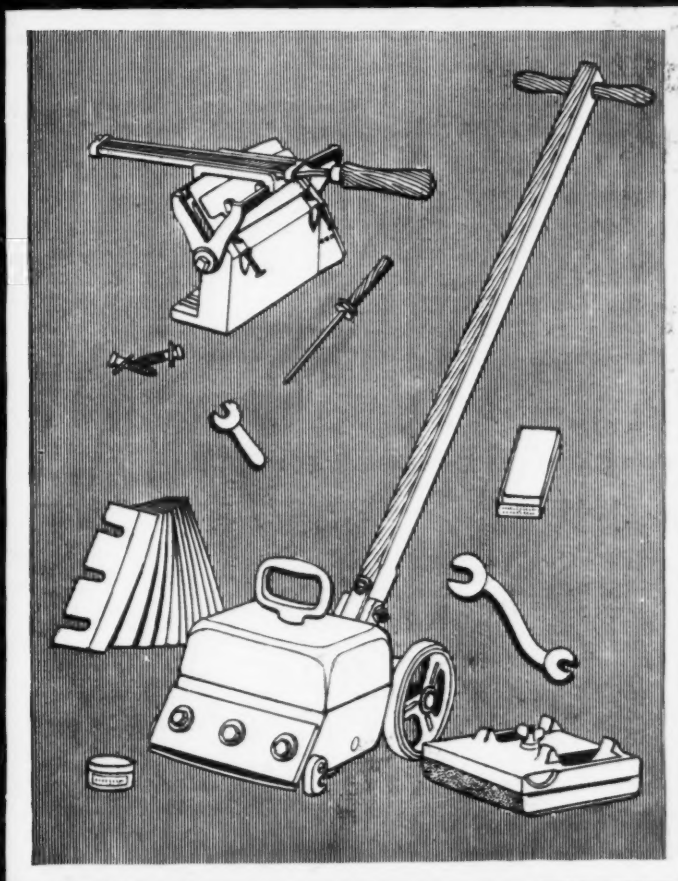
14 Thomas Street,

NEW YORK

One Week's Free Trial

I WANT EVERY CONTRACTOR OR CARPENTER who has any floor scraping to do to send for the Acme Floor Scraping Outfit on a week's free trial basis. Put the machines to work. Give them a thorough tryout. Let your men operate them, then judge for yourself as to their merit. **C**No deposit required. No strings to this offer. It is a straightforward business proposition, based on the fact that I do not expect you to buy an article without you knowing what it is and what it will do. Talk is cheap, so are words on paper. The Acme Machines do their own talking. **C**Will you listen to what the Acme has to say? Kindly remember it costs you nothing, neither do you obligate yourself in any way to buy the outfit. I want to introduce the machines to you so that when you are ready to buy, you will know what the Acme is like. **C**Send for the machines to-day, also for booklet which fully describes the same.

JOS. MIOTKE
249 LAKE STREET
MILWAUKEE
U . S . A





SUCCESSFUL Draftsmanship

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CHIEF DRAFTSMAN

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Complete Drawing Outfits, Highest Quality, FREE

Address, **CHIEF DRAFTSMAN, DIV. 17,**

Engineers' Equipment Co. (Inc.), Chicago, Ill.

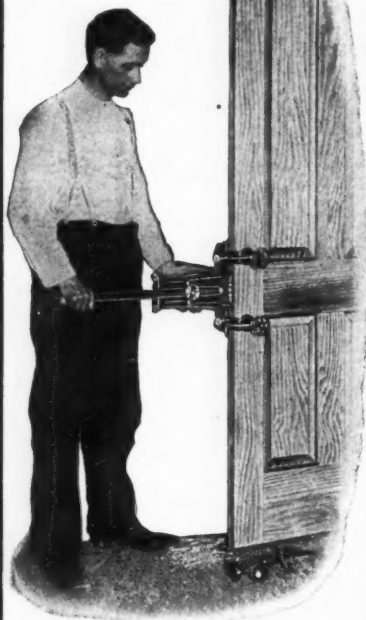


VALUE \$13.85

FREE TO MY STUDENTS
Delivered at once

Miller's Improved Mortiser

Miller's Way
160 doors in 8 hours



Will cut an opening in three minutes for a mortise lock in hard, soft, cross-grained or end wood, parallel with sides of door.

The labor is performed with slight exertion.

The care is practically none, as the tool does not get out of order.

The adjustment is done in a moment's time for the different sizes. The cutters are five in number and cover locks from 1/2 in. to 1 1/2 in. thick.

It cuts all the different lengths of openings for locks. Thin doors are handled as easily as thick doors.

Brains needed are just common, ordinary brains.

It does not mar the door. Sent on trial.

A. W. Miller Mfg. Co.

Main Office & Factory

CINCINNATI, OHIO

Western Office
RIVERSIDE, - CALIF.

PHOENIX INSIDE SLIDING BLINDS

WILKES BARRE, PA.

The Phoenix Sliding Blind Co.

Enclosed find my check for blinds. I am pleased with them and sorry I did not have them put throughout the whole house.
O. W. MILLER.

Comfort!

Economy!

Convenience!

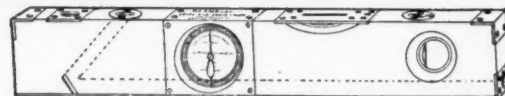
BRIDGE & CANAL STS.

The lately improved springs and corrugated steel rods put the "PHOENIX" far in lead of less improved styles. Write for Catalogue 'C' and free samples, showing construction.

PHOENIX SLIDING BLIND CO.

PHOENIX, N. Y.

THE AMERICAN Combined Level and Grade Finder



All Progressive and Up-to-date Mechanics as well as Manufacturers having use of a Level, are getting one

An instrument with which at one glance you can get the true slant on any line or grade either in degrees, inches or percentage, or all at the same time, and will at once give the exact distance need to plum up to a true level.

A Civil Engineer that you may have with you at all times.

The most practical, durable and convenient instrument of the day. The longitudinal recess which is shown in cut is well worth the low price of the instrument.

Write at once for large list of testimonials from all over the United States, and special introductory price given only to first applicants with privilege of taking agency. Address Edward Helb, Railroad, Pa.



COMPO-BOARD

A substitute for Lath and Plaster
Can be put on by any Carpenter.

It is Warmer, more Durable,
Quicker and more Easily Applied.

Manufactured all 4 ft. wide, 8, 9, 10,
11, 12, 13, 14, 15, 16, 17 and 18 ft. long.

For Sample, Price and
full Description, Write

Northwestern Compo-Board Co.
MINNEAPOLIS :: :: MINN.

Before Buying a Floor Scraper

DO THIS:—Let Us Send You THE "LITTLE GIANT"

Your
Success
Means Our
Success

Prepaid, Absolutely **FREE** of Any Expense
to You Whatever

15,000

"Little Giants"

Now in Use

Testify to its Utility

Write Now Today
For Free Catalog

HURLEY MACHINE CO.

GENERAL OFFICE AND WORKS

155 South Jefferson St., CHICAGO

BRANCHES:—New York, San Francisco and Toronto, Can.

You try it on your own floor and if not satisfactory in every way, ship it back at our expense. When you have proven for yourself that the "LITTLE GIANT" is all we claim:—

The best floor scraper on earth from every standpoint, write us and we will make you satisfactory terms for its purchase.

CUSTOM MADE FLY SCREENS

Our work is far superior to the usual output of local mills and has a style and finish not obtainable from those who do not make a specialty of screens.

For outside screens we use the identical finish of the outside of Pullman cars.

The best grades of Wire Cloth, enameled, galvanized, genuine bronze, etc. Fastened by tacks or by the "lock-strip" process.

Intending purchasers may have free by mail samples of woods, finishes, and wire cloth and copy of catalog and price list. Agencies in many cities. Special terms to contractors and builders.

The A. J. PHILLIPS CO.
FENTON, MICH.

23 Years' Experience

3½ Acres of Floors

PLUMBERS' SUPPLIES AT WHOLESALE



If you need anything in my line and wish to

SAVE

20 to 40 Per Cent

on every article, write for my free illustrated Catalog. Shipments promptly made from a very complete stock of guaranteed goods.

Small orders are as carefully handled as large ones.

B. B. KAROL, 233 W. Harrison St., Chicago, Ill.

PLATE GLASS

Bath Room Fixtures

FOR RESIDENCES, HOTELS, OFFICE AND APARTMENT BUILDINGS

Absolutely sanitary, require no cleaning, never wear out or show the effects of use. Not affected by hot or cold water. The modern 20th century toilet and lavatory fittings.

PLATE GLASS TOWEL BAR



Price \$1.50

No. 141 24 inches, adjustable. Also made in 30, 36, 42 and 48 inch lengths at slightly higher prices.

Round glass towel bars, \$2.00

Adjustable glass towel shelves, \$3.50, \$4.00, \$6.00

We also sell plate glass with polished edges for table tops, any size, and glass push plates for use in fine residences and apartments, manufacture and re-silver mirrors, etc.

CATALOGUE SENT FREE ON APPLICATION

Geo. H. Anderson & Co.

Manufacturers and Jobbers of Plate Glass Specialties

281-291 W. Superior Street - - CHICAGO

Carpenters, Electricians and Plumbers Nest of Saws

Patented December 12th '05

**BISHOP
No. 15**

Especially designed for their use. The handle and Blades are so constructed to allow the Blades to be Changed, Reversed and Adjusted to suit the work desired. The Hack Blade is Toothed and Tempered to saw Metal. Runs without set and can be resharpened until the Blade is used up. Made like our No. 78 Hack Saw. Use a five inch file and thrust the file straight through. "No bevel".

If your dealer will not supply
you. We will deliver
one set for **\$1.65**

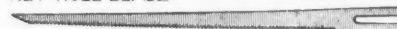
HACK BLADE



COMPASS BLADE



KEY-HOLE BLADE



- | | |
|---|---------|
| 1 18-inch Hack Blade for Sawing Metal . . | \$12.00 |
| 1 12-inch Compass " " " Wood . . | 3.00 |
| 1 10-inch Keyhole " " " " . . | 2.00 |
| 1 Handy Handle Complete with Screws . . | 3.00 |

Per Dozen . . \$20.00

GEO. H. BISHOP & CO.,

Lawrenceburg, Ind.

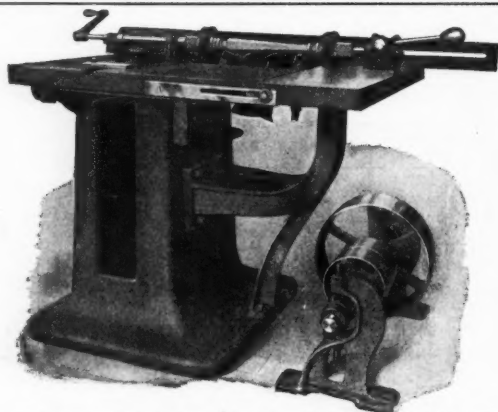
U. S. A.

Write us for Circular that lists

33 Varieties

of work that can be done on our

No. 6 Universal Turning and Block Machine

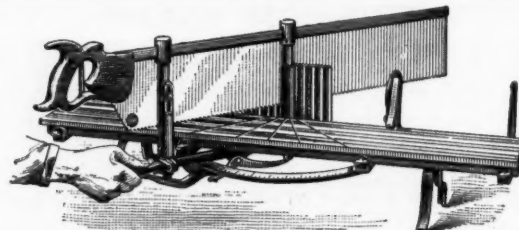


This machine is built like a machine tool, and is a rapid, practical and handy machine for every class of work for which it is recommended, from making turnings and mouldings of various kinds to panel raising, jointing, cabinet sawing, etc., etc. Invaluable in the manufacturing plant and a veritable gold mine for working up waste.

Write now for that "33 Varieties" Circular

C. Mattison Machine Works

879 Fifth Street, :: :: :: :: :: BELOIT, WIS.



Nicholls Common Sense Miter Box

We have endeavored to place on the market a Mitre Box suitable for practical work, and having tested it thoroughly, we are satisfied we have succeeded in doing so, and are placing this Mitre Box on the market warranted in every respect.

Nicholls Manufacturing Co. :: Ottumwa, Iowa

Ball-Bearing Spring Hinges.

THAT ARE PRACTICAL

The Shelby Chief Double Acting Floor Hinge has solved the problem of easily get-at-able, hinges, impervious to water and dampness.

Doesn't go in the floor but rests on top.

Easily applied, and very economical.

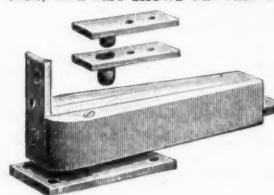
The labor saving feature is being appreciated by carpenters and builders everywhere.

Send for our free catalog which contains some sensible hinge talk, and also shows our full line of Double Acting Ball-Bearing Spring Butts and Builders Hardware. Free on request.

Write Today.

**The Shelby Spring
Hinge Co.,**

Shelby, Ohio



TOOLS FOR SLATERS MANUFACTURED BY BELDEN ARE GUARANTEED

Their superiority over others is acknowledged by thousands of users. Made-to-order steel used in their manufacture adopted only after most careful experimenting gives them their value.

ONE HAMMER
ONE RIPPER
ONE STAKE
ONE PUNCH
Constitute a Set

If Your Dealer Cannot Supply
You, Write Us Direct



OUR HAMMERS
are perfectly balanced and are
provided with

Leather Handles
to prevent hand from slipping

Our Tools Bear an
International Reputation

THE BELDEN MCH. CO.,

Whalley Ave. and Tryon St.
NEW HAVEN, CONN., U. S. A.

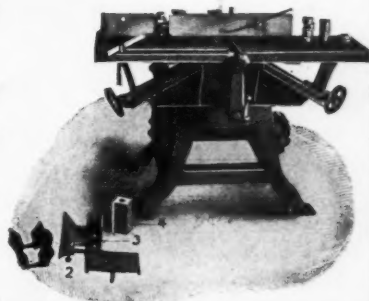
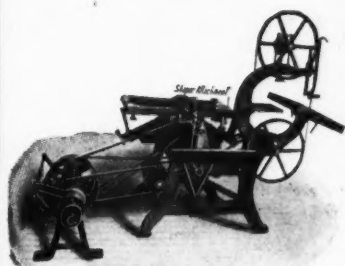
"DEFIANCE"

Cuts shown in ad will give you an idea of
our latest improved

Variety Woodworker
Six Distinct Machines in One

Write for catalogues and
full descriptive matter.

THE SIDNEY TOOL COMPANY
Sidney, Ohio



NO QUESTION ABOUT IT

IT'S THE BEST ACKERMANN'S RAPID FLOOR SCRAPER

Is Guaranteed to do More, Better and Easier Work
than any other on the market.

Knife Advantages

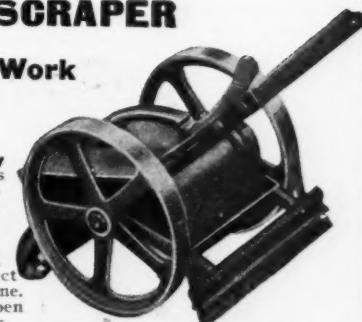
By means of a simple eccentric device, the knife blades of the "Rapid" can be instantly moved or set at any angle, thus securing a "drawing out." No floor scraper can be a success that does not bring the knife blade across the floor surface with a natural, hand-like movement. The "Rapid" does this perfectly. Any size blade up to 4 1/2 x 8 inches can be used on this machine.

Exclusive Knife Sharpening Feature

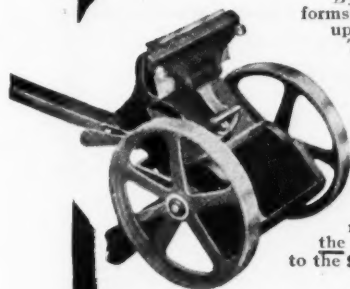
By simply reversing the position of the machine (turning it over) it forms its own knife sharpening vise, the blade being brought into a perfect upright position, ready to sharpen, without removing it from the machine. This saves time, and time is money. The operator proceeds to sharpen the knife, then turns the machine over and goes ahead with his work.

Our Special Guarantee Offer

We will ship a Rapid Floor Scraper, charges prepaid, subject to use FREE for three days, by any responsible person. If you are then satisfied the machine is all we claim for it you can purchase it, if not we will have the machine returned at our expense. Further: if, after you purchase this machine, you find that, at any time under equal conditions it will not do "More," "Better" and "Easier" work in a given number of hours than any other floor scraper, will return your money and you can keep the machine free of cost. This is a straight offer, without any strings to it, made to anyone desiring to secure the best floor scraper made without risking their money until THEY KNOW what they are buying. We refer to the State Bank of Michigan, Grand Rapids, Mich., as to our guarantee and responsibility.



This Brush is an Exclu-
sive Patented Feature.
NO OTHER MACHINE
HAS OR CAN USE IT.
Patent Allowed Nov. 1907



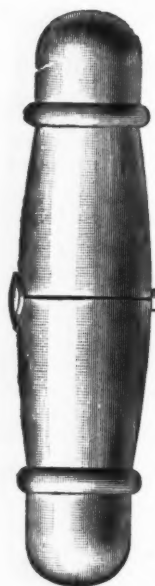
Cut Showing
Machine in Re-
verse Position
Ready to
Sharpen the
Knife-Blade

J. B. ACKERMANN CO.

Sole Manufacturers

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GRAND RAPIDS, MICH.



Here is a Gimlet

Equal in quality and usefulness to any Brace Bit

HANDLE OF
SELECTED
COCOBOLO
WOOD

THREE SIZES ONLY
Cutting 4-32, 6-32, and 8-32 Holes

Price Postpaid **15 cents** each

H. H. MAYHEW COMPANY

SHELBURNE FALLS, MASS.

You will increase your profits and save a lot of time by making

Crescent Machines

an important part of your shop equipment. They are well built by mechanics skilled in building wood working machinery, and only the best materials are used in their construction.



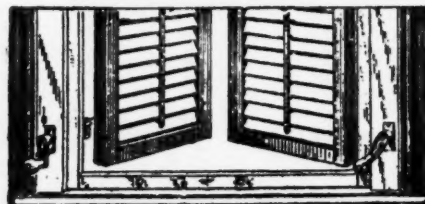
THIS is the No. 2 Crescent Saw Table illustrated and described on pages 28 and 29 of 1908 catalog. It is a thoroughly substantial machine, well suited for general work. Can be furnished with Boring Attachment if you want it that way. Table tilts to 45 degrees, and mandrel is made long enough so dado head may be used. Machine is self-contained; no countershaft required. It is complete with saw and endless belt when it reaches you. Send for 1908 catalog giving complete description and telling about our line of Band Saws, Saw Tables, Jointers, Shapers, Borer, Swing Cut-Off Saw, Disk Grinder, Planers, and Planer and Matcher.

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Shutter
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New and improved patterns and designs.

Opens and closes the blinds without raising the window. Automatically locks the blinds in any position desired. Made of gray and malleable iron. The best and most durable blind hinge. Incomparable for strength, durability and power. Can be applied to old or new houses of brick, stone or frame. Send for Illustrated Circular. If your hardware dealer does not keep them send direct to

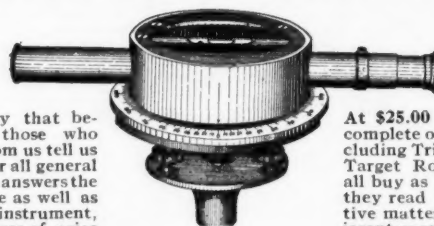
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FLEMINGTON, N. J.

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At \$25.00 for the complete outfit, including Tripod and Target Rod, they all buy as soon as they read descriptive matter, which is sent upon request

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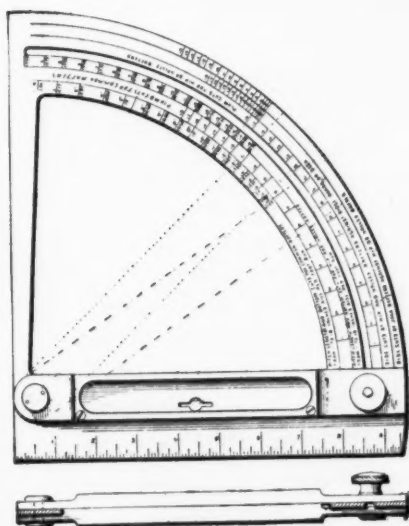
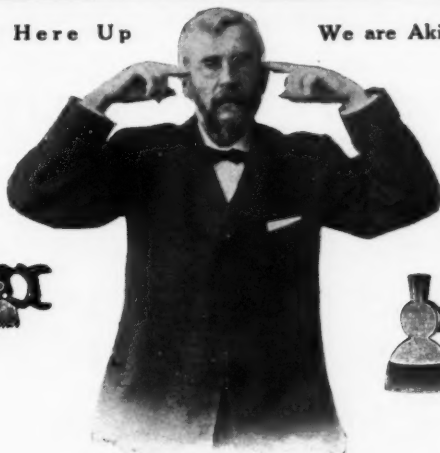
Would You Keep Abreast of the Times?

From Here Up

We are Akin to the Gods

From Here Down

We are Akin to the Ox



THE CALHOON Rafter and Polygon Bevel

Every bevel in the universe is contained in a quadrant; pass a line through it, from the center of the square to any degree or pitch, register on it the length (per foot run) and the opposite blades of the square will automatically (from that line) give bevels desired. See?

All calculations are based on 12 inches the unit of *base run* and 24 inches the unit of *pitch or rise*, and all hip, valley, octagon and jack, or cripple rafters on run and rise of principal or common rafter. We all know how difficult it is to read and apply the square. This tool will help you do both, or, rather, do both for you, as it is a practical tool.

The relative use of this tool in a carpenter's hands is that of an X-Ray machine to the surgeon, or of an interest book to a banker, or the computing scale or cash register to the merchant.

It is an organization of draft-board, square, tri-square, bevel-square, plumb, level and bevel-protractor into one tool.

This is a substantial TOOL $9\frac{1}{2}$ — $10\frac{1}{2}$. Made of Nicked Steel.

Testimonials

"The best framing tool in existence."—O. C. Kagelmacher, Case School Applied Science, Cleveland, Ohio.

"The most complete tool I have ever seen."—M. M. Lloyd, Master Mechanic, East St. Louis & Suburban Railway Company.

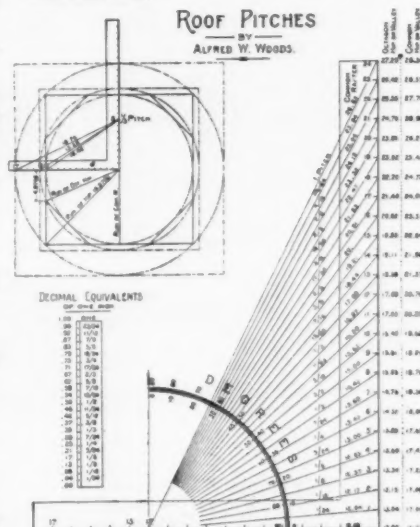
"The best mechanical device ever put on the market."—District Council, Kansas City, Mo., C. J. Huston, president, Edd. S. Abdill, secretary; District Council, Indianapolis, Ind., Chas. E. Bacon, president, Z. F. Carigan, secretary; District Council, Cleveland, Ohio, Phil. Hyle, president, Jno. B. Melcher, secretary; District Council, St. Louis, Mo., Wm. M. Davis, secretary.

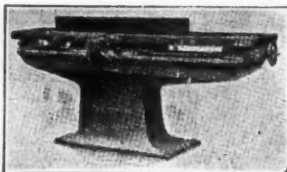
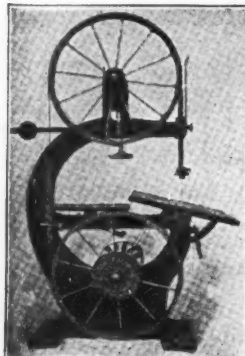
Ask your Retail Hardware Dealers for them, or write to the following Jobbers for one:

Standart Bros. Hardware Company	- - - -	Detroit, Mich.
Vonnegut Hardware Company	- - - -	Indianapolis, Ind.
The W. Bingham Hardware Company	- - - -	Cleveland, Ohio
The McIntosh Hardware Company	- - - -	Cleveland, Ohio
Geller Ward & Hassner Hardware Company	- - - -	St. Louis, Mo.
Witte Hardware Company	- - - -	St. Louis, Mo.
Tenk Hardware Company	- - - -	Quincy, Ill.
Townley Metal & Hardware Company	- - - -	Kansas City, Mo.

Or Send \$3.50 to - A. O. CALHOON & COMPANY - Perry, Mo.

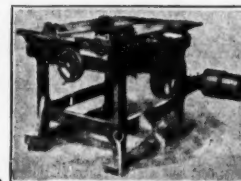
This illustration gives an idea of adjustment. The book of instruction will explain its full uses and application. Booklet of instruction with each tool.





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with a Gasoline Engine or
Motor make a Model Shop*



You can save time and money by being in a position to manufacture your own millwork.

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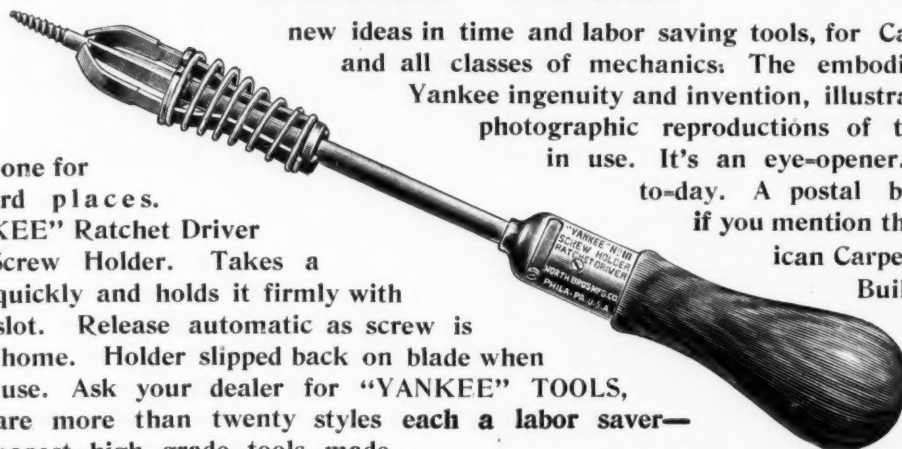


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NORTH BROS. MFG. Co., Philadelphia, Pa.



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THE RELIANCE EDGE TOOL CO., Youngstown, O

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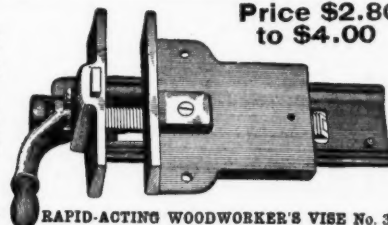


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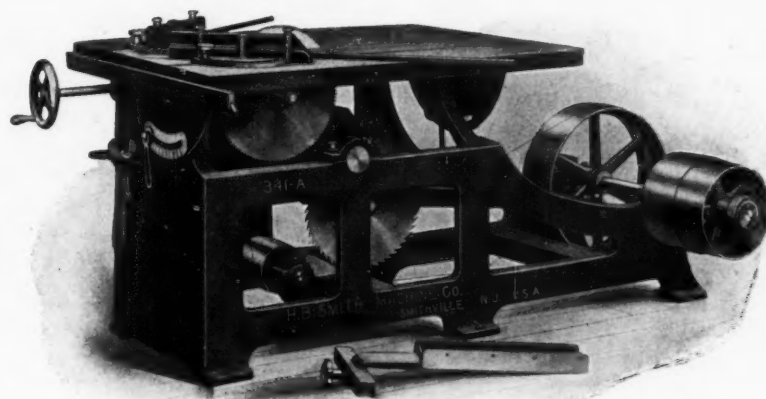
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SMITH of SMITHVILLE The Sign of QUALITY

**Modern Shop Equipments a Specialty
We Make 150 Different Kinds of Machines**

ASK FOR CATALOG



No. 341 A Combination Double Arbor Saw

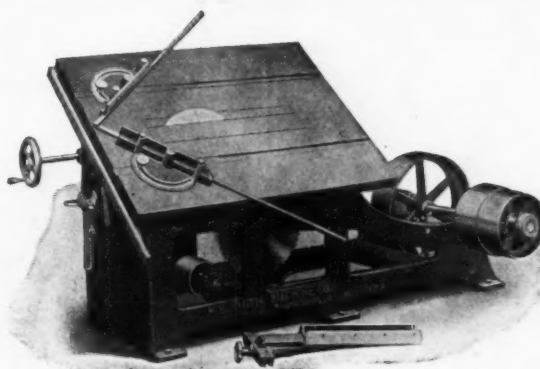
EVERY user of machinery knows that if he were obliged to reduce his equipment to one machine he would retain a **Universal Saw**.

The **Circular Saw** is the indispensable tool—the beginning of all things in a shop—therefore why not make a wise selection? We build 21 different types of sawing machines and feel competent to

consult intelligently with you on this subject. The Machine shown here-with is very useful for general work, and a great labor saver when operated on specific wood working problems.

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Showing Table Tilted

H. B. SMITH MACHINE CO.

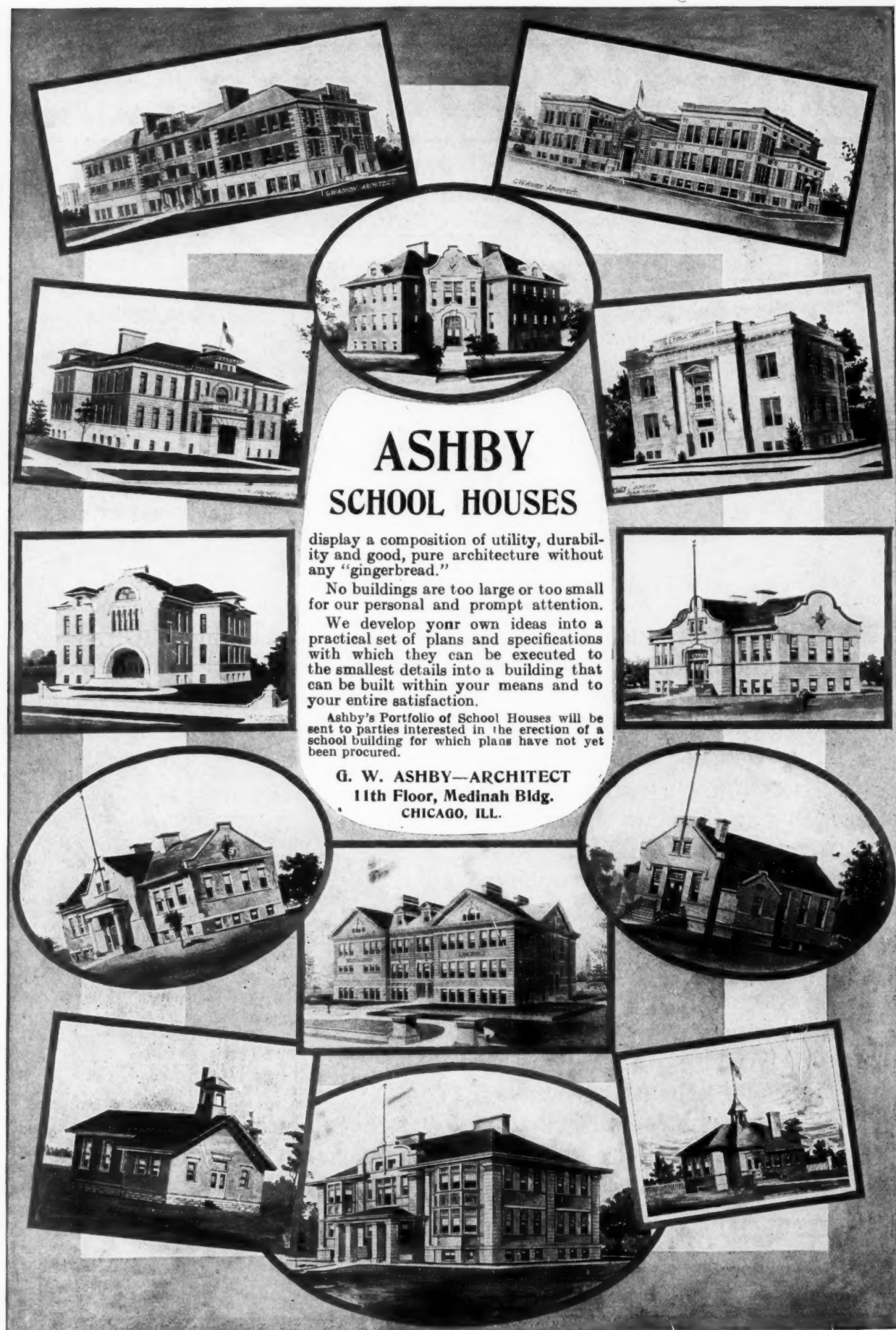
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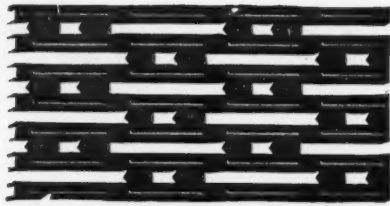
No buildings are too large or too small for our personal and prompt attention.

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Coming right down to the economy question Clincher Lath has got everything beaten.

As a practical man you can understand the principle by the illustration. Notice the level

plastering surface—the construction that's different.

Sagging Is Impossible

Sagging between the studding is rendered absolutely impossible if Clincher Lath is used. Read what progressive carpenters have to say about it.

Easier to handle and easier to erect than any other lath on the market. Prove this by sending to Department C for samples. Free to anybody interested.

The American Rolling Mill Co.
MIDDLETON
OHIO



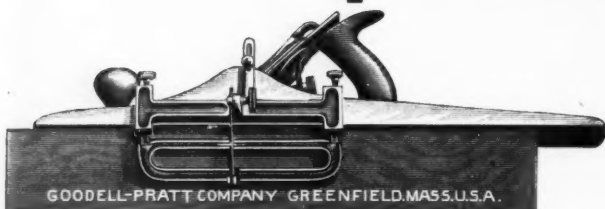
Send for Our Map of Boston,
Showing Exact Location
of



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250 Rooms Newly Furnished
With Brass Beds

When you visit Boston, if you desire the greatest comfort with the least expense, you will find Hotel Rexford all right. You will notice the central location of the hotel, its nearness to the Union Station, State House, Court House, theatres, and business houses. In other words, it is a part of Beacon Hill. Of course what you want when you visit Boston is comfort and safety, and, if economy goes with it, that makes a combination that will undoubtedly prove satisfactory. Therefore, when in town, "TRY THE REXFORD" and we will make special efforts to please you.

Plane Gauge No. 333



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Carpenters will find this tool of great assistance in all cases where it is necessary to plane a bevel.

This tool can be attached to any Iron Plane and with a little practice an inexperienced workman can do as good a job as an old carpenter, and in so short a time as to put the other man to shame.

All up-to-date carpenters should provide themselves with this labor-saving and time-saving attachment.

Catalog giving complete description will be sent free on request.

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**Knurled Nail Set
for Five Cents**

and a Two Cent stamp for Postage—if after trial you will part with it, we will pay you Fifteen Cents to get it back. This is done to make them known. You can have either $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$ or $\frac{1}{8}$ point.

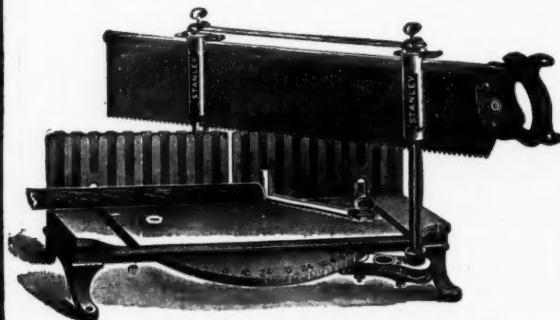
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MITRE BOX**



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As the Swivel will automatically lock at any point, the operator can quickly set the Saw to cut the angle needed.

For duplicating work, a stock guide can be screwed in a threaded Plate, inserted in base board, making a perfect length gauge.

With these new features, the **Stanley Mitre Box** is more than ever a necessity to all wood-workers.

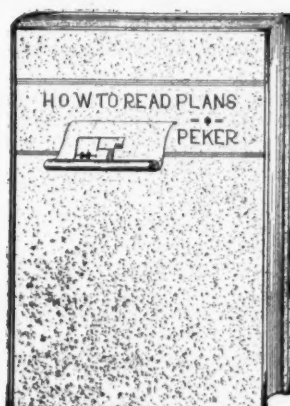
For full description, sizes, and prices, write for Catalogue No. 34.

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Adjustable 6, 8, or
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It will bore a hole
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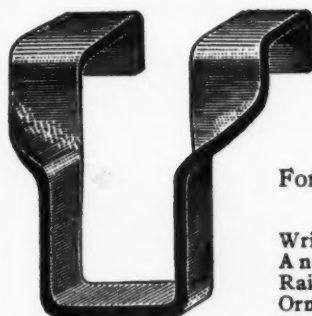


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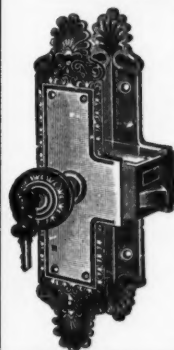
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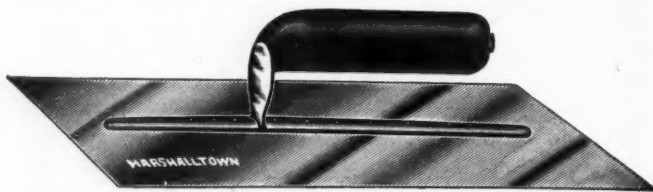
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Sargent & Company
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The
Best 3 Made

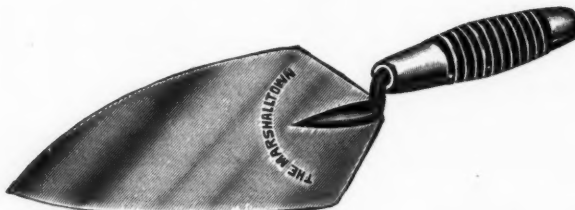
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GUARANTEED

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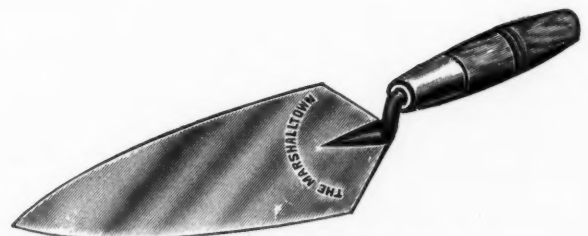
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100% More Light

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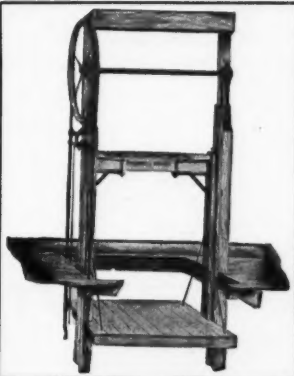
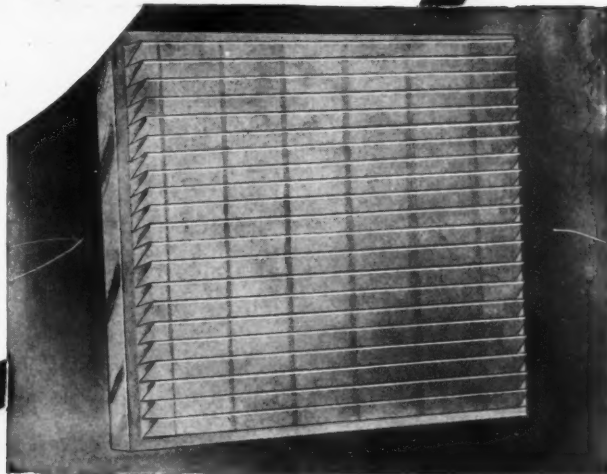
The construction is practical and thorough in every detail. Made of wrought steel, $1\frac{1}{2}$ inch by $\frac{3}{4}$ inch beam, with 1 inch by $\frac{1}{4}$ inch flat bar running through at right angles, forming a net work to receive either Plain Lens or 3-Way Prisms, and is made to size as ordered in black, and then galvanized, making it positively immune from corrosion.

Small cut shows sectional view of construction with Prism Lens, and is intended to be used as sidewalk or vault lights, same construction with Plain Lens is used as a floor or skylight. Leading architects and engineers have heartily indorsed the principle.

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American 3-Way Prism Company
134 North 10th St. PHILADELPHIA

in dark interiors, basements, etc., is obtained by installing 3-Way Prisms. Eliminates use of artificial lights, such as electric lights, gas, etc., and allows sweet, pure, sanitary daylight to enter.



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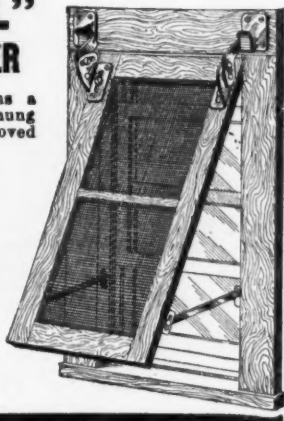
Our Elevators are noted for their Easy Running and Serviceable Qualities. They are practically self contained and can be erected by any carpenter in a few hours. We furnish Plans for erecting. When writing, state your requirements.

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can be used anywhere. It forms a perfect, practicable lock; sash hung with it cannot be opened or removed from the outside; it cannot be blown open by storms; makes practicable the only substitute for the half-sash sliding screen; is sold in sets, half sets, or in any other way the trade demands; indestructible; will wear out a dozen screens. Ask your hardware dealer or write for free sample and catalog.

THE ADJUSTABLE HANGER CO.
415 Huron St., Toledo, Ohio,
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DON'T PUT SASH WEIGHTS IN YOUR
WINDOWS—THEY ARE OUT OF DATE

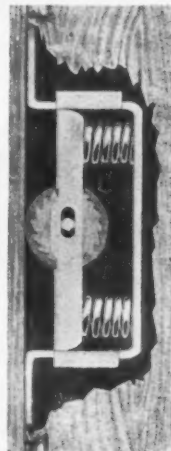
The "AUTOMATIC" SASH HOLDER

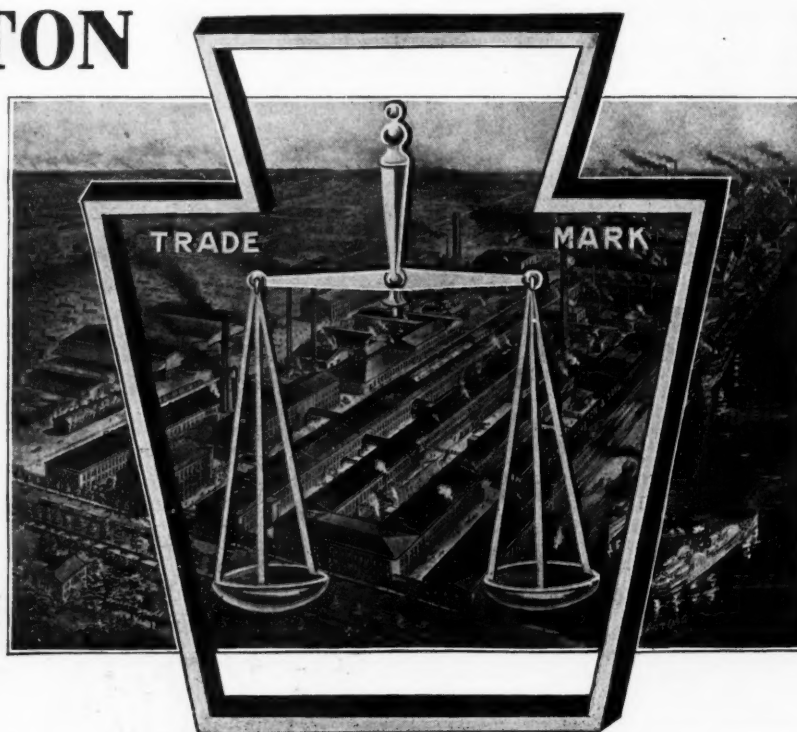
The "Automatic" Sash Holder is the new, modern, up-to-date device that dispenses with cumbersome sash weights, kinking cords or ribbons, useless weight pockets, misfit pulleys and reluctant balances, and saves all the time, labor and expense of fitting them in place.

Prevent rattling and permit the window to be moved up and down with ease. Hold it safely at any point desired.

A sample set of four sent, postpaid, for \$1.20. Ask your dealer, or write to us direct.

Automatic Sash Holder Company
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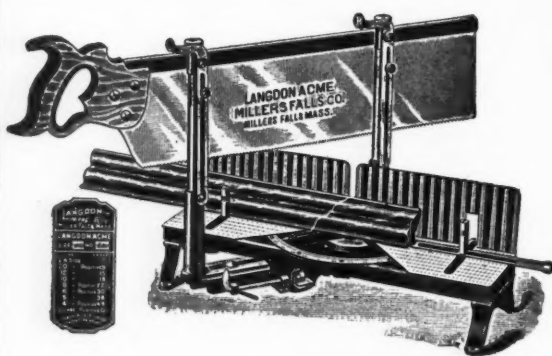
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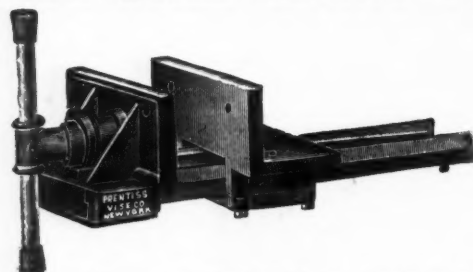
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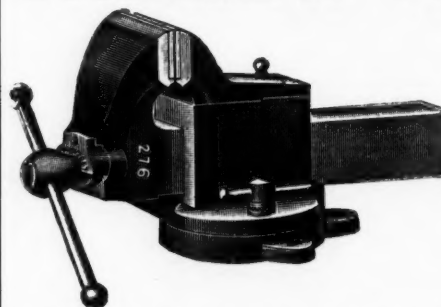
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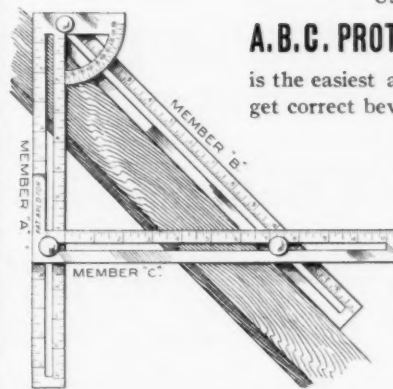
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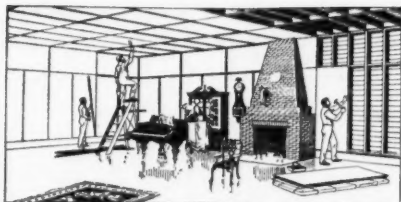


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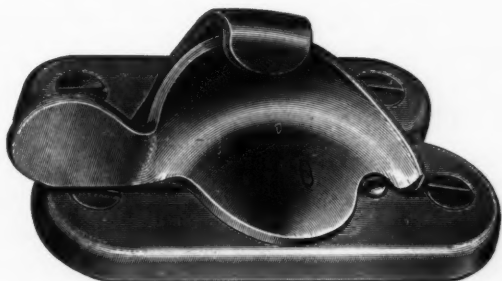
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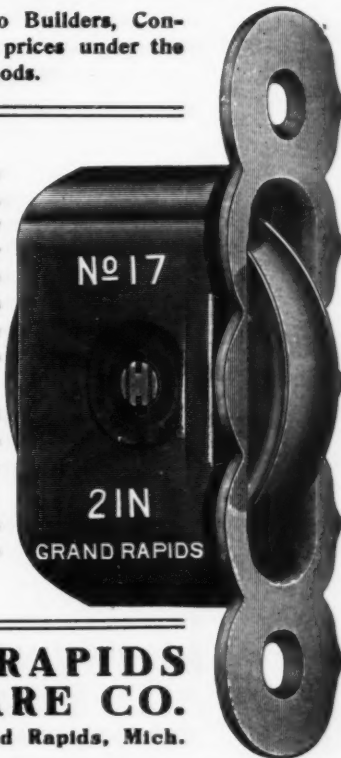
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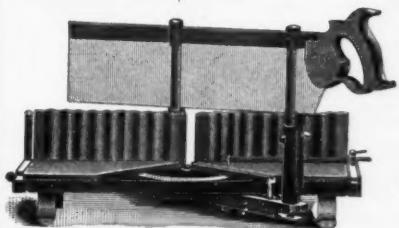
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The lucky men last month were T. J. Keepin, Brookfield, Ill., C. W. Peterson, Surprise, Neb., F. J. Bromm, Jersey City, N. J., L. R. Goodwin, Sterling, Colo., J. B. Thomas, Hunter, Okla. No lucky man from Texas. For other lucky men see back numbers.

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American Carpenter and Builder

Entered as second-class matter July 1, 1905, at the postoffice at Chicago, Ill under the Act of Congress of March 3, 1879.

Published monthly by

American Carpenter and Builder Company
185 JACKSON BOULEVARD, CHICAGO.

VOL. VI OCTOBER, 1908 No. 1

The AMERICAN CARPENTER AND BUILDER is issued promptly on the first of each month. It aims to furnish the latest and the most practical and authoritative information on all matters relating to the carpentry and building trades.

Short practical letters and articles on subjects pertaining to the carpentry and building trades are requested.

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TOO many young men strive to be good fellows rather than good citizens.

SMILING will not only get you more than frowning, but it leaves the face in better shape.

BE CAREFUL about cultivating the habit of saying "That's good enough;" it too often leads to carelessness and slovenly work.

MUCH trouble is caused in this world by throwing mud at the hornet's nest. Some people don't seem to be happy unless they are trying to get stung!

FOLLOWING the ideas of others may help you some, but it is only when you begin to generate ideas of your own and follow them that you are in line to amount to something.

"DE MAN dat succeeds," said Old Unkle Eben, "is de one dat has de grit to get up every mornin' an' put ditto marks under his New Year resolutions."

Honest Material and Good Work

A MAN is known by the company he keeps. A carpenter's tools and his materials are his company. Good tools and good materials go with good workmanship—which means another job at good pay. Three cents saved somewhere in buying some little piece of cheap building material may mean another job; but that job will go to another carpenter. Buy honest goods and goods that you know are honest by experience. And whatever you do, whether it's a small job or a big contract, *do good work!*

Public Education in Architecture

A POPULAR chord with the architectural profession was struck recently by George Oakley Totten, of Washington, D. C. in an address in which he took the position that the public should receive a certain amount of education in architecture.

"Everybody should be able," he said, "to criticize, with accuracy and intelligence, the public and private buildings which are rising rapidly on every hand. This knowledge would be of great advantage to the individual, but of vastly more advantage to the public. As T. G. Jackson of the Royal Academy said at the recent international congress of architects in London, architecture is a necessary art; in fact, the only neces-

sary art. It cannot be evaded like the others. It is important that the public should be qualified to know good from bad architecture, since they are the employers with whom it rests to choose the designs of modern buildings.

Destroying Insanitary Buildings

THE City of Washington is setting an example to other large cities in the country, destroying buildings which the health authorities believe to be insanitary. Thirty-two such buildings were razed during the month of March and about the same number were destroyed during each of the months of January and February. In less than two years about 1,000 buildings have been either destroyed or have been brought up to the sanitary standard required by the District ordinances. These numbers would indicate that it was high time that some such action was taken; and in fact many sections of Washington and even parts of its prominent thoroughfares were quite recently disfigured by shacks that would discredit a country town; but the greatest evil lay in the insanitary conditions existing in many buildings, aside from their appearance. At the present rate the Insanitary Buildings Board will, in a short time, have redeemed Washington's reputation and made it, as it should be, a model for the cities of the country.

Be an Optimistic Thinker

DID anyone ever get any good from talking about hard times, or fault-finding, or allowing himself to think that the lack of a college education handicaps him, or that he does not have the chances others have, or that there is no use for him to try to do anything above the ordinary, and so on? Can you recall any man having been made better, or attracting to himself more friends or pleasanter surroundings, by such thinking? If not, then you can make up your mind that such thoughts are a waste of energy. Though he may think he has good ground for anger, hate, envy, fear, worry and the like, did such feelings ever get anything worth having?

On the other hand, haven't you noticed that the man who doesn't complain about his trade, or his circumstances, or his lack of early advantages, or people or things, but keeps right on plugging away, thinking and doing things that are worth while—haven't you noticed that such a man forges steadily ahead?

Cement Show Feb. 18-24

THE executive committee of the Cement Products Exposition Company, Messrs. B. F. Affleck, Wm. Dickinson and J. U. C. McDaniels, has closed negotiations with the Coliseum Company, of Chicago, for the Second Annual Cement Show, which will open in the Coliseum Feb. 18, at noon, closing Wednesday night, February 24.

The committee will proceed at once to make plans for the show, and all the arrangements will be announced as they are decided upon. With the annual meeting of the Cement Users' Association earlier in the month at Louisville this will be a red letter month for cement men everywhere, for many of the exhibits can be shown at both shows.

The date chosen affords ample time, not only for the preparation of fine exhibits by firms and companies in every branch of the cement industry, but the exhibition company will have more opportunity to prepare for the show than it had last winter.

One Sunday will intervene during the progress of the show, and the management announces that the purpose of running over Sunday is to allow the exhibitors to have a day's intermission, which it is thought will be very satisfactory to them as a time for rest.

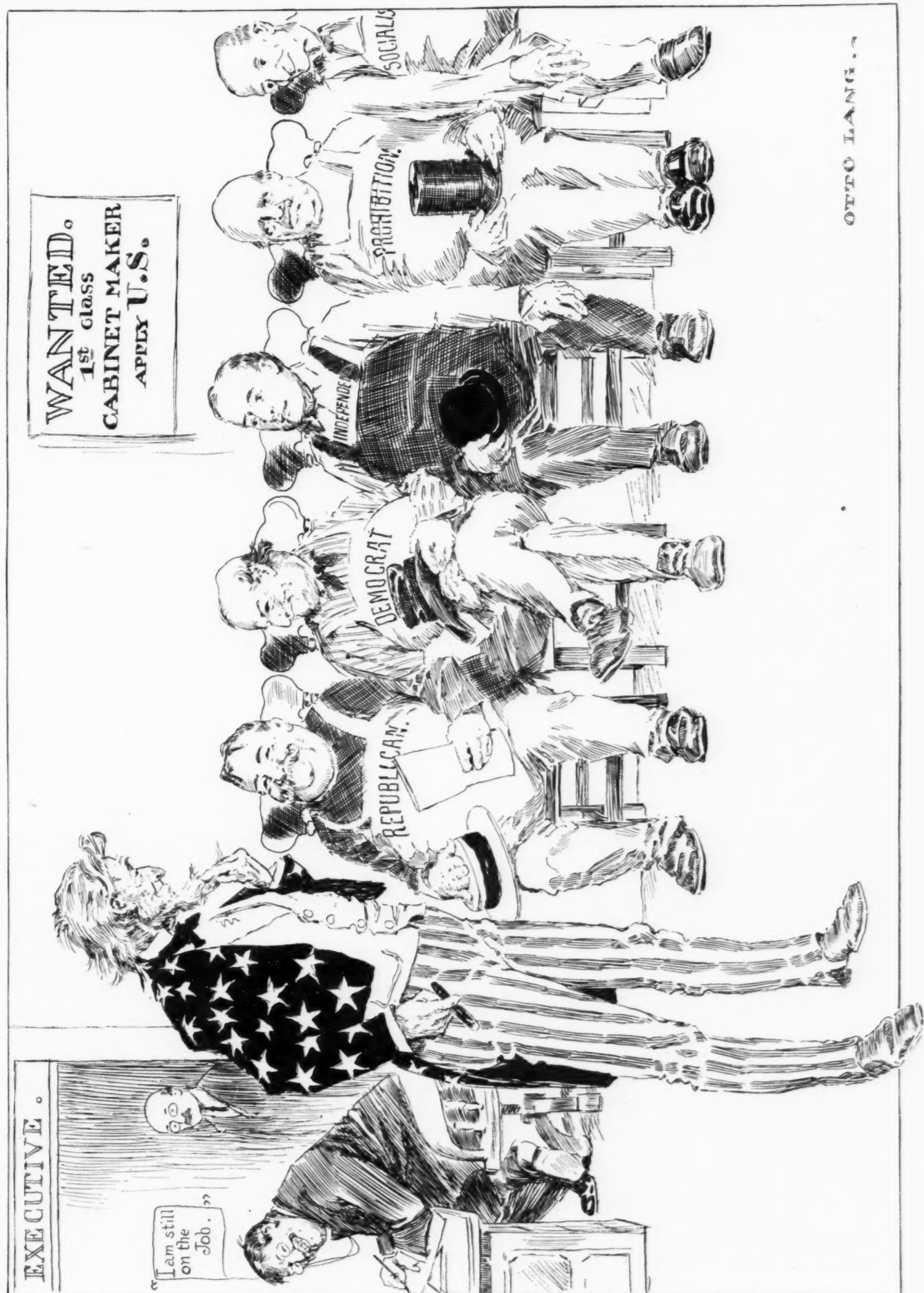
IT HAS been called to our attention that Mr. Meal is running for mayor of a Pennsylvania town; we hasten to declare ourselves lined up on the side of the meal ticket.

Kitchen Architecture

IT MAY seem strange to some to speak of kitchen architecture, when possibly less thought is expended there than on any other part of the house. But that is exactly the reason why the subject is being put forth now. The kitchen needs more architectural attention.

Sometimes a kitchen is simply a lean-to; sometimes it is a cubby hole; sometimes, where old-fashioned ideas prevail, it is large and roomy. But it is seldom that proper thought is used in its designing. What is wanted is not merely a kitchen that is inviting of itself, but one so constructed that the odors of cooking will not permeate all the corners of the house. To this end it would seem that special attention should be given to ventilation in connection with a kitchen. A kitchen might be isolated from the balance of the house, but that would put it out of touch with the dining room and cause many inconveniences, especially in the modest homes where the housework is done by the family instead of by servants.

So it is really the kitchen problem in the modest home that needs attention and needs solving. We might well use now some of that thought and energy that has been expended on sanitary plumbing, and on front effects, in designing kitchens that will be odor proof, that will not distribute the odor of the cooking all through the house. If the enterprising writers of the AMERICAN CARPENTER AND BUILDER have hobbies or ideas that they think are worth while on this subject, we will be glad to hear about them; there is need for more attention to the kitchen end of the house, that its numerous problems may be solved.



OTTO LANGE.

The Classic Theatre in America

By J. R. White



The World's Most Famous Theatre, Magnificent in its Ruins—The Colosseum at Rome

THE latest thing in open-air theatres, until the one planned by Elbert Hubbard for the Roycrofters at East Aurora becomes a fact, is the one at the University of California at Berkeley. It is still in a perfect state of preservation, having weathered the earthquake; this, in spite of the fact that a German newspaper insisted recently that on that occasion the roof fell in!

About fifteen years ago one of the students discovered that behind the University there was a certain curve in a certain hillside, and that at the base of this there was a level stage of greensward. An out-of-door extravaganza was arranged by this same student for Junior Day, and so great was the success of the first performance in "Ben Weed's Amphitheatre," that from that time on it became the authorized spot for college festivities, and midsummer night's

dreams of various sorts, and various occasions.

Five years ago the curve in the hillside was made more regular and outlined in stone. A theatre was built on the general plan of the theatre of Epidaurus in Greece, though somewhat smaller than the classic model, and with the stage considerably larger. The Greek stage was sometimes not more than five feet in depth. The stage of the Berkeley theatre is twenty-eight feet deep, one hundred and thirty feet wide and accomodates comfortably six hundred actors. The auditorium is two hundred and fifty-four feet in diameter and is made up of stone steps, rising tier on tier, above the orchestra—a circle of hard-packed earth fifty feet across. Back of the stage is a bare white wall ornamented with Doric columns. Two massive pylons finish the ends of the side walls, which extend out toward the auditorium.



Classic Greek Theatre at Berkeley—Dedication Exercises

It has been proposed that a row of marble seats should outline the orchestra and that each class should contribute a carved chair marked with its year, to be occupied on all public occasions by its most distinguished member. One can imagine that there might be some bit of discussion as to who was the most brilliant light of the many who had tried to shine. One can imagine too, the anguish of some modest little scientist who, shrinkingly sensitive, is nevertheless decreed by vote to be the most distinguished graduate of his year and is deposited in the great white marble arm chair, in view of all the world! Perhaps it is just as well that the present system should be continued of reserving the front rows of cane chairs for those who possess the distinction of being able to pay the extra price these seats command.

and life and imagination to thousands of human souls who think his thoughts and feel his emotions. Here Bernhardt recalled the days of Phedre. Shumann-Heink brought back the mediaeval Rhine world, and Roosevelt stirred his vast audience with desire for strenuous and righteous living. There have been Greek plays, the old miracle and morality spectacles, the Elizabethan masques—everything that is of interest in connection with the development of the drama has had here adequate and often excellent presentation.

These are the mid-week events. The regular Sunday afternoon performance is a half hour of music. The best musicians from all corners of the world are allowed to contribute their time and talent for one-half hour on Sunday afternoon as a free gift to the thous-



America's Classic Theatre—Graduation Exercises at the University of California

Reference is often made to the stone theatre of the University of California. If the tourist complains that it is only plain gray Portland cement, he is informed that if it is not stone it soon will be, for the donor of the theatre, William R. Hearst, has promised to face the entire structure with marble.

It is a distinctive privilege and honor to perform on the stage of the Greek theatre of Berkeley. The distinction is unique enough to tempt the greatest actors, musicians and orators to try there the power of human expression. The test is a severe and sure one; for the stage furnishes none of the extraneous stage helps in the way of scenic effects supplied by the ordinary theatre.

It must be a supreme moment when the bare white wall for background and colorless sky for canopy an individual feels himself a solitary figure giving color

ands of music lovers who come to Berkeley for this event from the half dozen towns and cities that surround San Francisco Bay.

The curious tourist comes, the father with his family, the student, music hungry, the lover and his lass—all sorts and conditions of men rest here after roaming the Berkeley hills and find, let us hope, the balm they seek, in this atmosphere of music and sunshine. No Sunday afternoon entertainment, it would seem, could be more conducive to real happiness and goodness than this half hour of music in the Greek theatre at Berkeley, under the clear blue of the California sky.



Man has constantly grown in power, strength, wisdom, excellence and worth. If he has ever fallen it has been upstairs, not down.



A Model Country Bungalow for \$1500.

By Mary H. Northend

THIS house is situated on the crest of a hill, at Fayal Mountain, Westboro, Massachusetts. It is owned by Mr. J. B. Strongman, and was designed by Calvin Kiessling, architect, of Boston, Mass., as an adaptation of the Swiss Chalet.

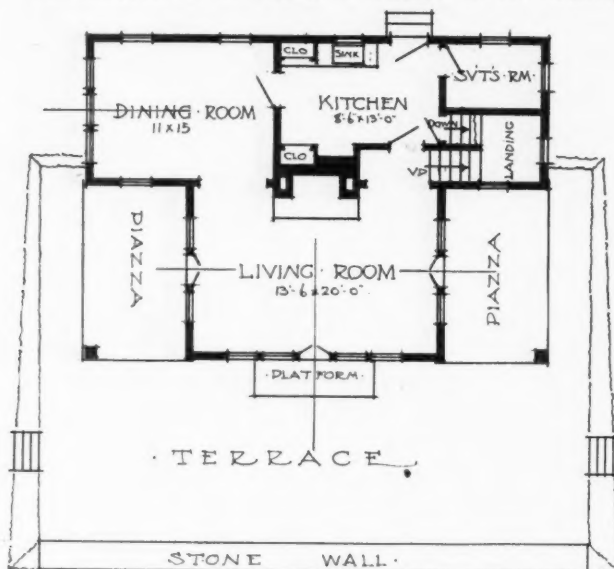
The spot chosen for the location is the highest land between Westboro and Worcester, with a long grassy sweep upon each side, and a background of forest trees. The exterior view here shown is that of the north corner of the house.

The exterior of the house is finished in the country

Switzerland. It adds very much to the cosy charm.

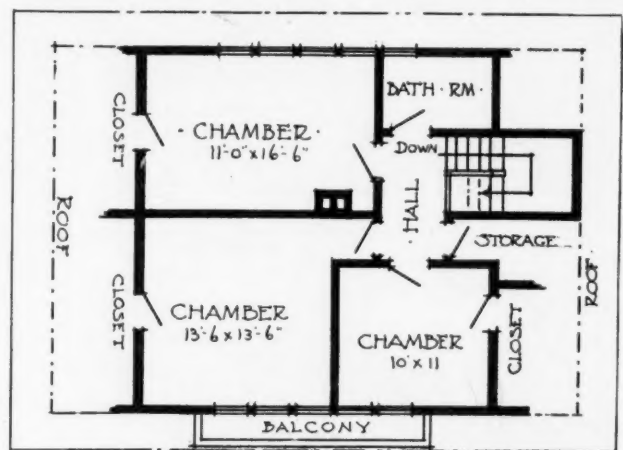
Both the shingles of the overhanging roof and the weather boarding of the sides are deeply weather stained, which gives the bungalow the appearance of having been built much longer than is really the case. The effect of this coloring is to fit the house to its surrounding of grassy lawns, and background of oak and pine, as unobtrusively as the grey lichens fit into the hillside pasture. The only paint is that used upon the window sashes; it is pearl white.

There are two verandas, of moderate size, the one



GROUND FLOOR PLAN.

pine, laid in the rough state. The second story shows wide boards placed vertically, the joints covered with battens, the boarding upon the lower story is laid horizontally and is tongued and grooved. The little overhanging balcony, with its balustrade and brackets, is similar to those seen all through the mountains of



SECOND FLOOR PLAN.

upon the northeast side, the other upon the southwest; there is also a pergola with a trellis upon the south.

The living room, which is twenty-one feet long by fourteen wide, lies between these two verandas, with doors opening upon each of them, and a third outer door opening upon the northwest, under the little overhanging balcony. These three doors give a delightful circulation of fresh air. Being glazed their whole length, they also admit much light, so that only case-

ment windows are necessary. This assists in the disposition of the furniture.

The fireplace and chimney received original treatment, from the fact that they were built from headers of clinker brick, taken from an old kiln, near by. The beauty of the material consists in the fact that it shows so many different colorings, with attractive shadings of grey, dull purple, and blue.

The architect who designed the house also planned the plain and solid combination settle and magazine-table, which may be seen before the fireplace.

The whole interior is at present unplastered. It is the purpose of the owner to finish the inside with rough plaster, and to make the bungalow an all-year-round-home, in the near future. In the meantime, it is perfectly comfortable for occupancy, except during the winter months. The joists are double, one foot on centers and boarded across the bottom, to give the effect of one long beam.

Behind the living room are the kitchen and dining-room, the latter occupying the whole eastern corner of the house. The finish and the furniture are similar to those in the living-room.

Upon the second floor, are three bed-rooms and a bath. There are hard pine floors throughout the house,

all the woodwork is stained dark brown, and there is a good cellar, to contain the furnace which will be placed when the bungalow is in use during the whole



View Looking Into the Dining Room

year. This cellar is cemented, sides and floor.

The cost of this attractive little bungalow to build was approximately \$1,500. In many parts of the country at the present time it could be built for less.



The Living Room. Showing Hand-Made Combination Table and Settee

How to Build a Small Cold Storage Plant

DEVELOPMENT OF REFRIGERATION AND ITS SPECIAL VALUE TO FARMERS—WORKING DRAWINGS OF A PRACTICAL MODERN PLANT FOR PRIVATE OR CO-OPERATIVE USE

By T. B. Kidner

THE general introduction of cold storage during the past few years has had an enormous effect in stimulating production and opening new avenues of wealth for agriculturists and others engaged in the distribution of food products the world over.

By means of refrigerator cars, western beef is now delivered in prime condition all over the continent and together with the fruits of California finds a ready market in London, Paris and other European cities, by an extension of the principle to ocean liners. The experience of Argentina, Australia and New Zealand as to the benefits of cold storage makes a very interesting story. In 1880 sheep had become so numerous in Australia that their carcasses were used for ma-

nure with the principles or construction of large plants involving the installation of machinery, but rather with small, simple storage houses, which can be cheaply and easily built, and for which there is an increasing demand in many localities. The farmer, the small country butcher and the storekeeper handling eggs, butter, small fruits and many other perishable commodities, are all looking for some simple and inexpensive means of cold storage.

With the view then, that readers of the *AMERICAN CARPENTER AND BUILDER*, who may have had no experience in building ice houses and refrigerating chambers, may become acquainted with the methods and principles involved, this article, dealing with the plans and specification for a simple and low-priced plant, has been prepared.

The Hanrahan System

The system is based upon the well-known and widely used Hanrahan system, the best known for long distance transportation on the railroads of this continent. It is also similar in principle to many domestic ice chests or refrigerators, and consists in passing a current of air over a mass of ice and thence into a separate chamber in which the food products are stored. From the simple natural law that warm air rises and cold air falls, a continuous circulation of cooled air passes through the refrigerating chamber and back onto the surface of the ice in the ice chamber. Any odors and gases from the food are thus brought into direct contact with the melting surface of the ice, which absorbs them and keeps the air in the food chamber in good condition.

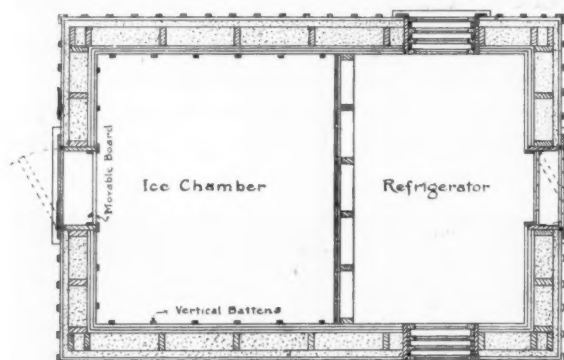
The design here given is adapted from one recommended by the Ontario government, and has been built in many localities with complete success. The higher portion is the ice chamber, the lower the food chamber. Each portion has a metal ventilator, of the type advertised in the columns of this magazine, fixed on the ridge. The roofs are of shingles, laid on one inch boarding in the usual manner, and capped with five inch ridge boards and two inch roll.

Details of Construction

The site chosen should be slightly elevated, so as to allow of good drainage, and must be prepared by laying a good bed of sand, about six inches deep, well packed down and leveled, and rather larger than the plan of the building. In this sand four pieces of 6 by 6 are imbedded to form the bearing for the floors. The section shows this and other details of construction.

Sills for the frame are formed of 2 by 8 pieces, doubled and lapped, and spiked at the angles.

The size of house recommended by the Ontario government for the average small plant would call for an



Plan—Showing also Wall Construction

nure, and they were bred for their skins and tallow only. In that year, however, a small beginning was made in cold storage, and 400 carcasses of sheep were exported in chilled or refrigerating chambers of steamships.

At the present time, Australia exports about two million carcasses, and the Argentine Republic and New Zealand each send nearly double that number annually to the over-crowded manufacturing cities of Great Britain and the continent of Europe.

Cold storage plants are also a feature in all our large cities today, and under the fostering care of the federal Department of Agriculture, cold storage collecting stations have been established in many farming districts on the co-operative plan. By means of these collecting stations, the farmers of the districts round about them can keep their perishable fruits and vegetables, eggs and poultry, for a long time in prime condition, and can avoid marketing their products all at one time, so creating glutted markets and consequently ruinous prices.

The advantages of this, both for the local trade and for markets in distant cities, are too obvious to need dwelling upon. In point of fact, the refrigerating industry has become so important in all countries that it now forms a branch of engineering by itself. It is not the purpose of this article, however, to deal

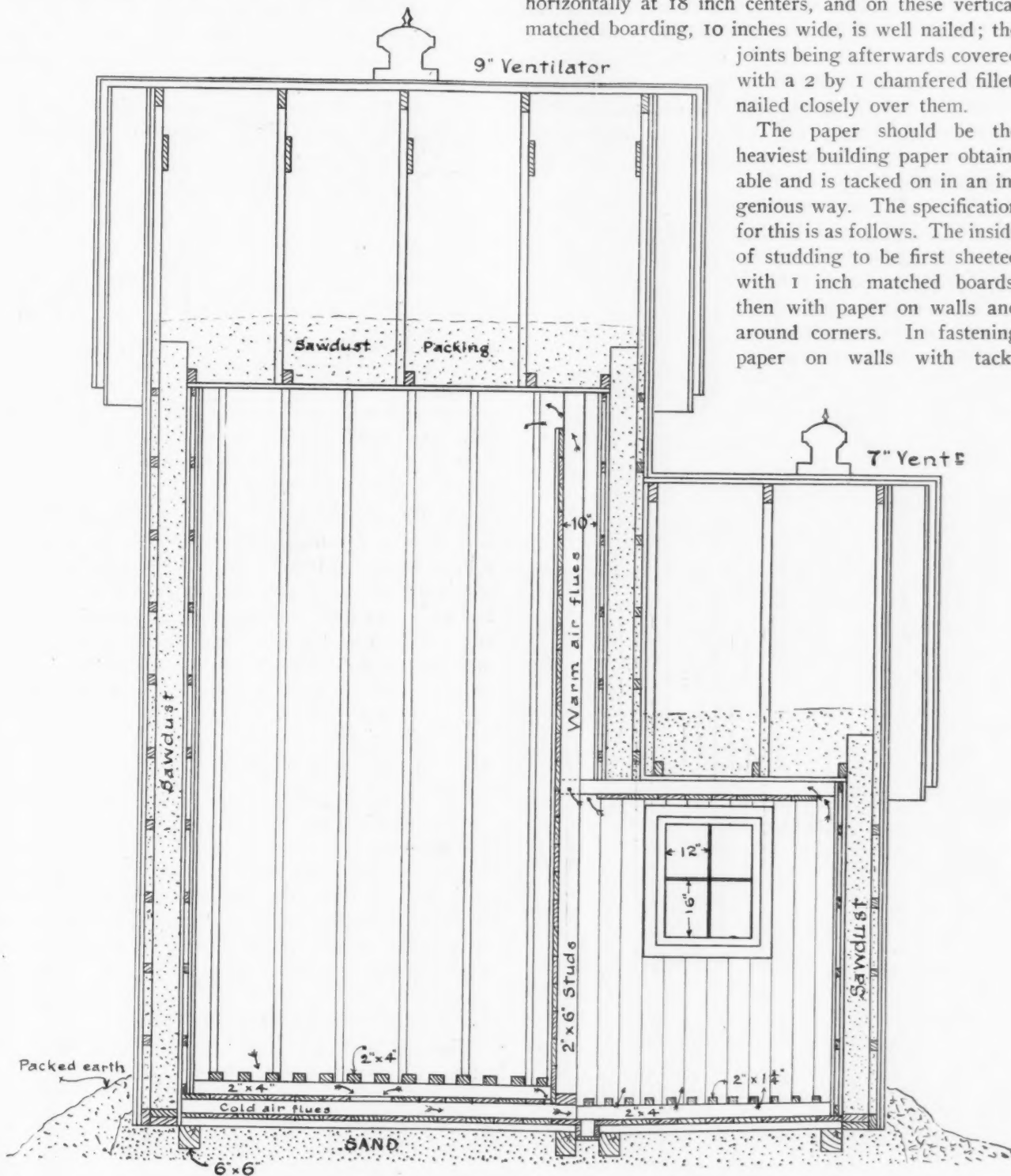
oblong formed of 2 by 8 pieces, 11 feet 6 inches the short way and 17 feet 6 inches the long way. On this 2 by 8 studs are erected and spiked into position at the foot. The studs for the ice chamber are 18 feet long and for the refrigerating room 9 feet, and are spaced as shown in the plan.

The ceiling joists, 2 by 4, are spiked to the sides

port for the latter. The ceiling is formed of $\frac{7}{8}$ matched boarding, nailed to the underside of the joists and covered with 14 or 15 inches of well-packed, dry sawdust. All spaces between the studding are also packed with sawdust, well pressed down into every nook and cranny.

On the outside of the studs, 2 by 2 straps are nailed horizontally at 18 inch centers, and on these vertical matched boarding, 10 inches wide, is well nailed; the joints being afterwards covered with a 2 by 1 chamfered fillet, nailed closely over them.

The paper should be the heaviest building paper obtainable and is tacked on in an ingenious way. The specification for this is as follows. The inside of studding to be first sheeted with 1 inch matched boards, then with paper on walls and around corners. In fastening paper on walls with tacks



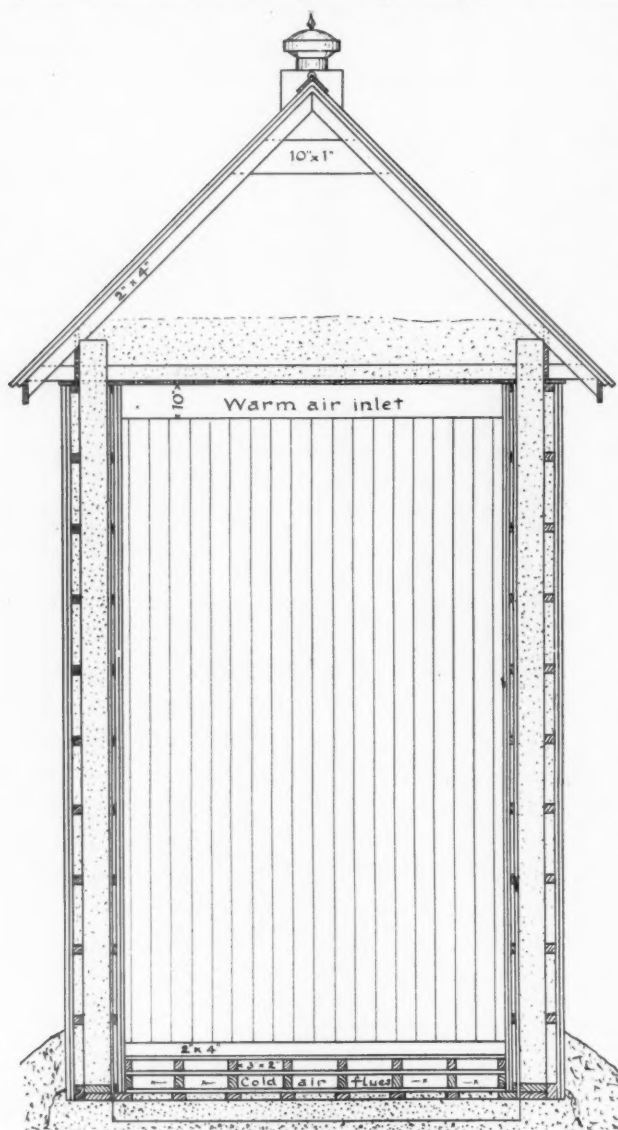
Section Through Ice and Refrigerating Chambers, Showing Air Circulation

of the studs, so that the bottom edge of the joists will be 12 inches below the top of the stud. The joists extend far enough over the sides to allow the rafters to be spiked to them, thus forming a good sup-

port for the latter. The ceiling is formed of $\frac{7}{8}$ inch long, do not drive the tacks home, but let them project half their length. Then take a ball of twine (No. 8 cotton, if procurable, or something similar, such as thick yarn, not too hard); run this twine

over the heads of the tacks, which must be placed so as to have a line of twine directly under the 2 by 1 inch battens to be put on. When the twine is on, drive tacks home; on the paper, and over the twine, place vertically 2 by 1 inch dressed battens at about 18 inch centers. Between these battens fix similar ones horizontally, over the twine and about 36 inches apart. These horizontal battens must be cut true on the ends and fitted tightly between the upright pieces. Over these battens lay another layer of paper and twine, put on as before; then sheet with matched lumber fixed vertically. Over this inside sheeting, place 2 by 1 battens, fixed vertically from floor to ceiling at about 18 inch centers. (These battens are not required in food chamber.)

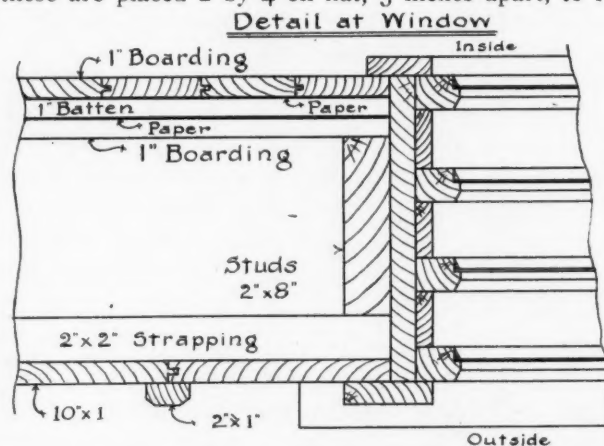
The floor of the ice chamber is built up on the 6 by 6 sills, referred to before, and consists of alternate layers of matched boarding and quartering. The floor



Section Through Ice Chamber

must have a fall of at least one inch towards the central gutter. As may be seen in the cross section, the first layer consists of pieces of 2 by 4 on flat, well spiked to the 6 inch sills, 1 foot apart, and thoroughly

packed round with sand. On these is laid the first floor of 1 inch planed matched boards. On this, and directly over the 2 by 4 pieces, are laid pieces of 2 by 3 to support another floor of 1 inch planed matched boards. A reference to the longitudinal section will show in this floor an opening 12 inches wide and extending the full width of ice chamber and a narrower one at the end. On this upper floor is laid another set of 2 by 4 on edge over the under bearers; across these are placed 2 by 4 on flat, 3 inches apart, to re-



ceive the blocks of ice. The two layers of boarding form a set of cold air flues, through which the air passes to the food chamber.

The floor of the food or refrigerating chamber is formed of 1 inch matched boarding laid on pieces of 2 by 4, spiked on two 6 by 6 sills and with a fall towards the gutter. Pieces of 2 by 4 on edge are then laid on top of the 1 inch boarding at 15 inch centers, and across these 1 1/4 by 2 inch battens, 1 inch apart, are firmly nailed. This lattice floor should be in two or three sections, so as to allow of its being readily lifted for cleaning.

The partition between the ice house next requires attention. It is formed of 2 by 6 studs laid on a 2 by 6 shoe piece spiked on top of the first layer of 2 by 3 bearers in the ice chamber. These studs must be planed on all sides, as they form the sides of the flues for the passage of the warm air from the refrigerator to the ice. A layer of planed matched boarding, laid horizontally, is then nailed to the studs, followed by a layer of paper and another layer of planed matched boarding, laid vertically. These layers of boarding are stopped 10 inches from the ceiling of the ice chamber to form the outlet for the warm air flues.

The end wall of the ice chamber, above the food chamber must now be formed. First spike some planed pieces of 2 by 4 to the 2 by 6 studs just described and to the 2 by 8 studs at the outer end of the food chamber, to form joists. The under side of these 2 by 4 joists is covered with planed matched boarding, all except a space of 12 inches at each end.

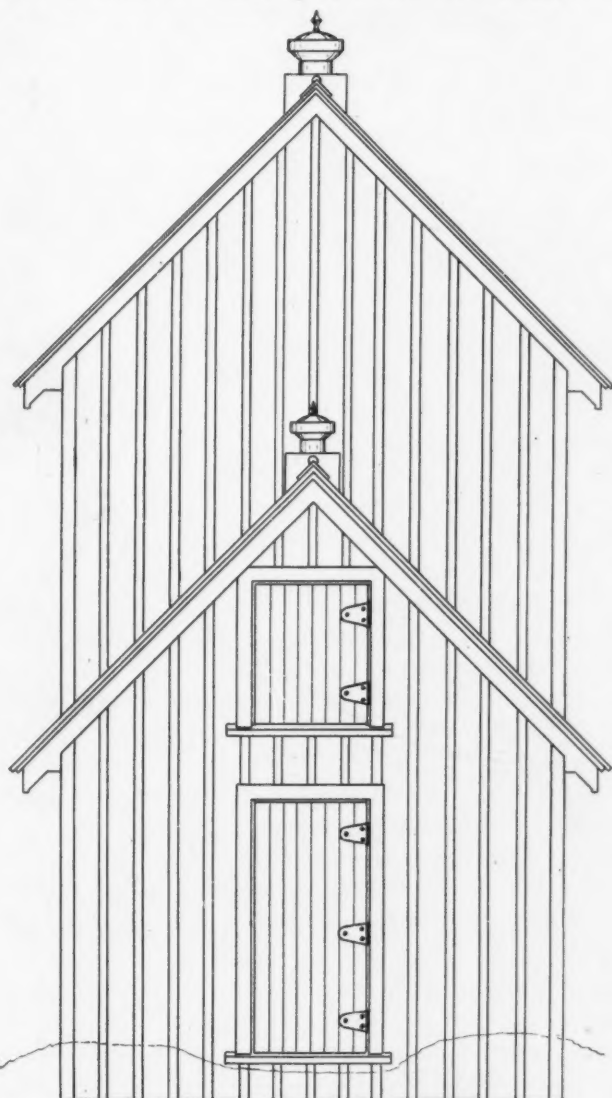
Short pieces of planed 2 by 4 are then spiked against the edges of the 2 by 6 studs to piece out the flues to 10 inches wide. Upon their edges are laid two layers of boarding with two layers of paper, and battens be-

tween. Next, 2 by 8 studs, resting on 2 by 8 pieces, supported on the 2 by 4 longitudinal ceiling joists, are fixed in position, and these are in turn covered with 2 by 2 strapping, vertical boarding and battens, as before described for the outside finish.

The spaces between the 2 by 8 studs and 2 inch strapping are packed with sawdust, as before specified.

The ceiling proper of the refrigerating chamber is then formed of 2 by 4 joists, with matched boarding on the under side and a 15 inch layer of sawdust on top.

The ice chamber end of the building has a small door in the gable to afford means of access to the space over the ceilings, so as to allow of the sawdust being packed down and added to from time to time. There is also a door below which gives access to the ice-chamber and is built in three pieces for convenience in



There Are Similar Doors in Other End for Ice

charging. The doors are of 1 inch matched boarding on the face and of the same material, laid diagonally, on the inside; stout building paper is laid between the two layers of boarding. Wide rabbets or stops should be formed and rubber draught stop tubing nailed on them, so that the doors close tightly against it.

The other end of the building, as shown in the elevation, has a door in the gable similar to that in the ice chamber end, but, as may be seen from the plan, the door to the refrigerating chamber is double, with an air space between. Each door is constructed in the manner described for the ice chamber doors. A good birch or oak sill should be provided. The windows in the refrigerator chamber are quadruple. Each of the four sashes is fitted closely into the frame and held in place with $\frac{3}{4}$ inch stops, as shown in detail. The window frame is of stout 1 inch stuff and the sill is 2 inch. Great care must be taken in making the window frame, so that no leaks can occur. This is important, for the efficiency of the whole plant depends upon every part being as far as possible air tight, so that the condition of the atmosphere outside shall not interfere with the circulation in the interior.

When food is placed in the refrigerating chamber (on suitable shelves, hooks, etc.), the warm air rises from it and passes through the flues into the ice chamber. There it comes into contact with the ice and passes down at the sides and end, through the cold air flues under the floor and into the food chamber again. This process continues indefinitely but, of course, becomes slower when the contents of the refrigerator chamber are thoroughly chilled.

The drain is also an important part and must be carefully constructed or it may afford a means of entrance for warm air from without. The drain inside the chamber is of wood, lined with heavy galvanized iron, and should discharge into a terra cotta gutter trap, connected with a few feet of pipe to carry the drainage clear of the site. The banking of the building with earth for a height of 12 or 15 inches is another precaution.

The inside of the ice chamber is left rough. The food chamber must have two or three coats of good shellac varnish and the whole of the exterior should be painted in the usual manner.

The size of house here described is the smallest recommended, but no difficulty will be found in adapting the methods and specifications to larger houses.



"Ah, the Pity of It"

Sing a song of swellheads, a fellow full of gin, coming home at 2 a. m., his wife won't let him in. His feet are full of tanglefoot, his head is full of wheels, the keyhole runs around the knob, he a funny feeling feels. He puts his feet upon the porch, his head upon the ground, and all the same within his "mug" the wheels are going round. He thinks that he is sober and everyone is tight, and he's in his bedroom instead of out at night. He thinks the moon's a dollar and will buy a dozen drinks, and many other thoughts he thinks and drinks and thinks. But when his wife she cometh and with a hickory slat, he gives a shout and yelleth, "Now, Mary Ann, quit that."

STEEL SQUARE

ALFRED W. WOODS

How to Use the Steel Square

SHOWING HOW TO FIND THE BUTT JOINT FOR HOPPERS BY DIAGRAM, ALSO HOW OTHER ANGLES REQUIRED IN BUILDING HOPPERS MAY BE OBTAINED

WELL, we are still in the hopper and what may seem worse to some of the readers, we do not know when we will get out. But we will start in easy this time, with an A-B-C-D method, as shown in Fig. 219. This is for a butt joint hopper. The pitch may be anything desired, from 0 to 90 degrees. When the board is lying flat on the base line, it represents "0" degrees and the cut would simply be a square cut and when the four sides are put together, would simply be a frame, as shown by the sectional corner in Fig. 220. But when one edge of the board is raised, the incline represents the pitch; and the more it is raised, the steeper the pitch, till it stands on its edge. It is then vertical and represents "90" degrees and the cut would again be square as in the former illustration, but this time when the four pieces are put together, they form the sides of a vertical box, as shown in the sectional corner at Fig. 221. This represents the beginning and the ending, and is

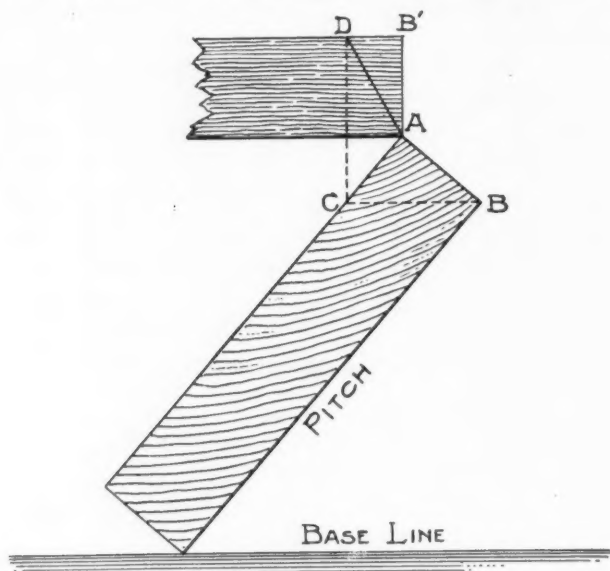


Fig. 219

clear enough. Anybody can see that, but how to find the cut between these points is the question.

Now, let us go back to Fig. 219. The pitch, as we said before, can be anything from nothing to straight up. In this, we have chosen 14 inches rise to the foot run. C-B is parallel to the base line. A-B¹ represents

the thickness of the board. Now draw the line C-D at right angles from C-B and the line A-D will represent the angle for the butt joint across the square edge of the board, or the same result may be found by simply beveling the corner of the board to the line C-B. Then the angle across the top would again be

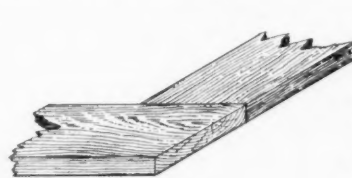


FIG. 220.

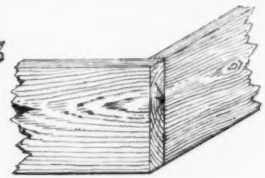


FIG. 221.

square and the intersection of this line at the edges gives the starting points for the side angles which are found in the same manner as for a hopper with the miter joint as before shown and described in our last article, at Fig. 214.

In the above we have shown how the angles may be found without the use of the steel square. We will now take the same example, as shown in Fig. 219 and illustrate how the same results may be obtained with the steel square. Along with same, are also shown two ways for finding the figures to use for the miter joints and one way for the angle for the cut across the face of the board to give the desired flare or pitch.

Referring to Fig. 222, the pitch is represented by 12 and 14 as will be seen by the board, which for illustration is made to occupy the full length of the angle though not necessarily so, as the board could be of any width. The edge of the board being square, the complement pitch rests at 90 degrees from the given pitch. Now, it is the length of the complement pitch ($21\frac{1}{2}$ inches) transferred to the blade, and the figures 12 and $21\frac{1}{2}$ will give the butt joint cut. To prove this, suppose the tongue is pivoted at 12. Now raise the blade. See the dotted circle line over which the $21\frac{1}{2}$ mark travels, till it rests at the parallel line from the tongue in its original position and it will be seen that the tongue stands in the same position to the edge of the board as at A-D in Fig. 219. Therefore these figures will give the angle for the butt joint cut when the pitch is 14 inch rise to the foot.

12 and $9\frac{1}{8}$ will give the miter joint for the same

pitch. Note the dotted circle from the heel to the intersection of the pitch and this point carried across to the blade rests at $9\frac{1}{8}$. The radius of this circle is

The dotted lines and circles shown in Fig. 222 are to illustrate the different proportions and their line of movements over which they pass in the transferring

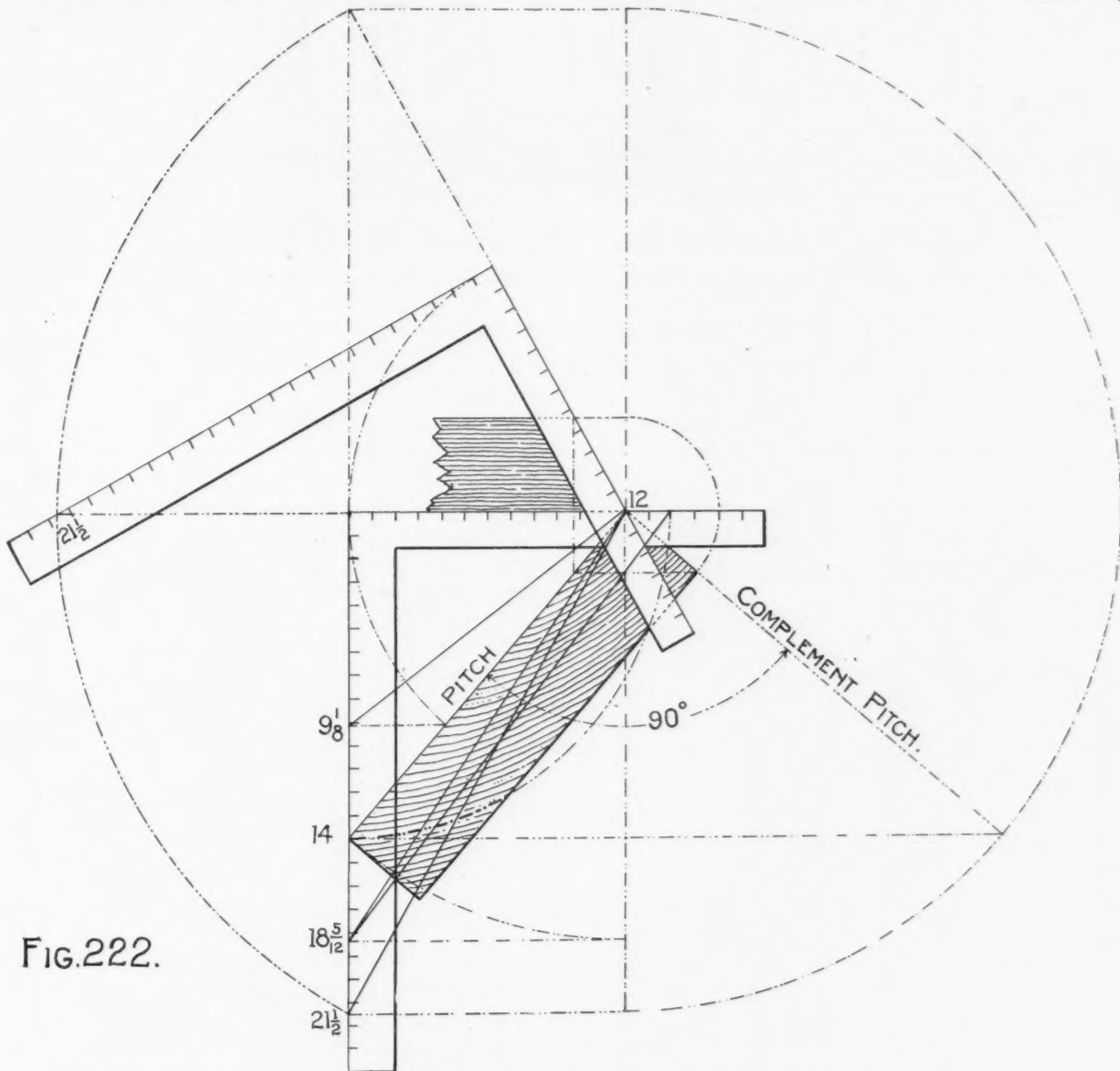


FIG. 222.

12 inches, because that represents the full scale for a one foot run. Then 12 on the tongue and $9\frac{1}{8}$ on the blade will give the miter, the blade giving the angle. Or the rise (14) taken on the tongue, and the length of the pitch ($18\frac{5}{12}$ -12) taken on the blade, will give

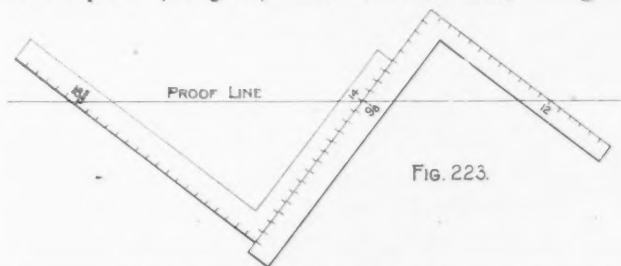


FIG. 223.

the same thing, but the tongue in this case gives the cut. For proof of this, see Fig. 223.

For the angle across the face of the board, it is 12 on the tongue and the length of the pitch ($18\frac{5}{12}$ -12) on the blade; the tongue will give the angle.

operation to get the proportions on the steel square.

The apprentice should study this diagram because all of the points are clearly illustrated as to their relation to one another. Remember that 12 is a fixed point on the tongue, because it represents the run for any pitch, while the figures on the blade are changeable because they are governed by the pitch which is changeable.



Caught a Tartar

The following vivid pen picture is taken from the editorial columns of an Iowa journal: "There was a blow. Somebody fell. We got up. Turning upon our antagonist, we succeeded in winding his arms around our waist, and by a quick maneuver threw him on top of us, bringing our back at the same time in contact with the solid bed of the printing press. Then, inserting our nose between his teeth and cleverly entangling his hands in our hair, we had him."

PRACTICAL CARPENTRY

Tile Veneer for Frame Buildings

AN INGENUOUS METHOD OF REMODELING OLD STYLE FRAME HOUSES TO MAKE THEM ATTRACTIVE AND UP-TO-DATE — PRACTICAL SUGGESTIONS

By C. Bryant Schaefer

AS MODERN buildings supersede the old style frame buildings it often becomes a question how to remodel them. An effort to imitate the new is seldom successful, but if the old buildings are improved in their own way the results may be very good. Designs of this sort have been lacking because the new students in art give no attention to the work of the

The new entrance was to be brought down to within a few feet of the grade. A half flight of stairs was to lead from the vestibule down to the dining room, and another half flight up to the parlor floor.

Heavy moldings around the windows, of course, had to be removed. It was also necessary to see that foundations were good and the walls and jambs plumb.

The design chosen for the remodeling calls for a veneer of glazed or enameled tile. Such a front would lead the fashion for a long time to come. The designer introduced a number of years ago enameled tile on exteriors, since which time it has become very popular. It is durable, always clean and cheerfully light, besides being elegant in appearance. This makes it well worth the expense.

The dimensions of the diagrams are suitable also for Roman brick, flatwise, so that that material can be used with terra cotta moldings. These moldings are so constructed that a thin veneer may be used.

The veneering may also be of cast concrete blocks of the same sizes. It is this choice of materials and adjustability of the same forms to different dimensions, that makes the design economically practical.

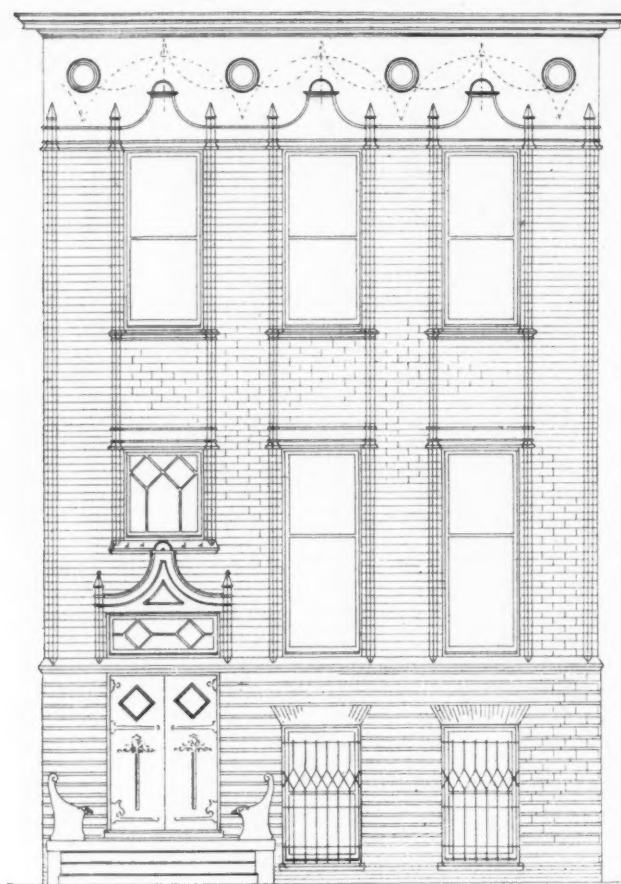
The V shaped vertical members of terra cotta stiffen the veneer at the corners and windows. These are anchored to the wall and overlap the wall covering, holding it in place. This also covers the ragged joint where the tile has to be clipped. This is shown in the section of the first and second story wall.

The basement is in Richardson courses, only instead of stone the brick is laid alternately flat and edgewise. The vacant space is filled with concrete, as shown in the section.

It is not enough to drive spikes into the wall for anchors. They must hook firmly around the sheathing or another spike at right angles. The window head requires a small angle as shown on the diagram. It must be bolted to the framework.

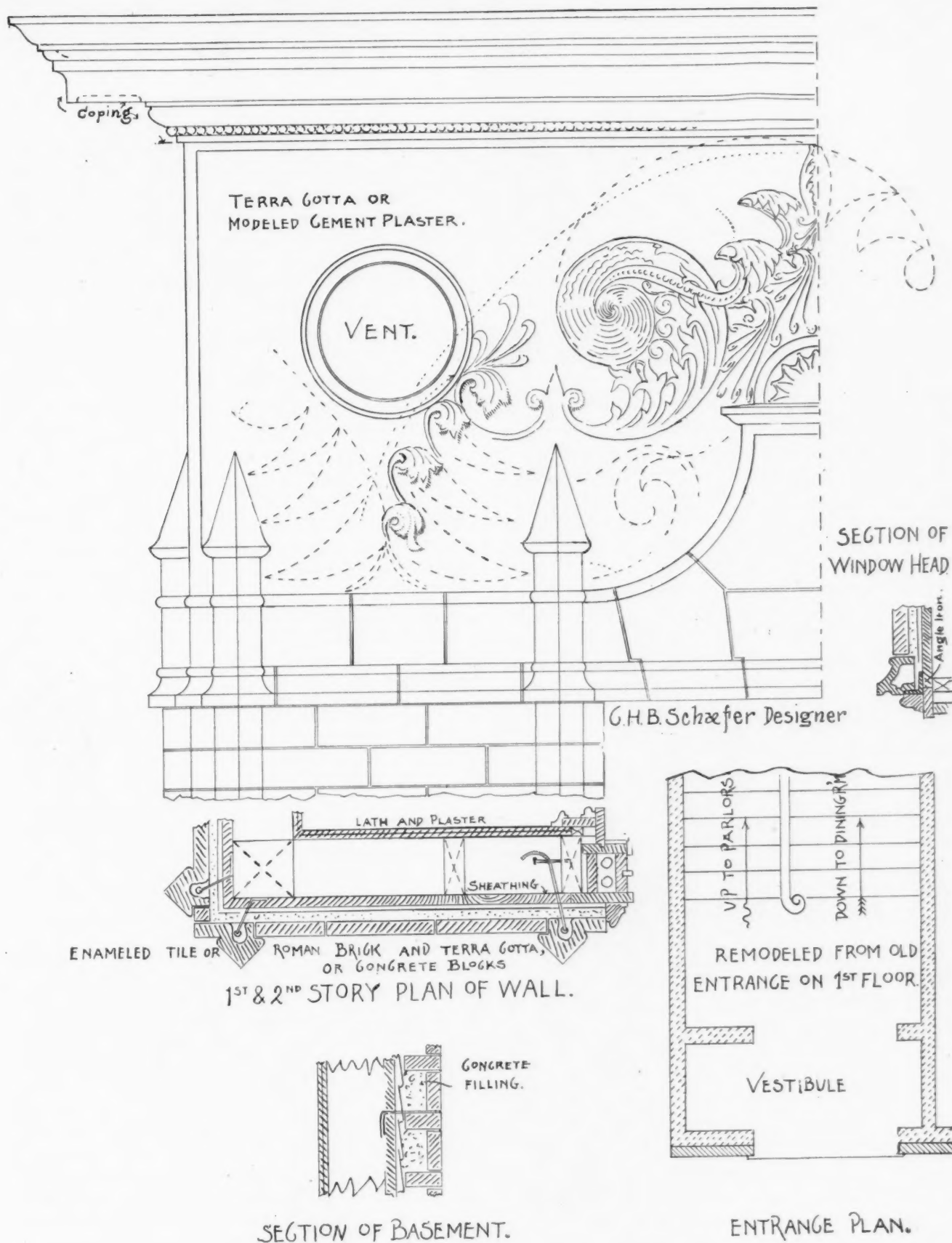
The space between the veneer and the siding should be not less than an inch and well filled with cement mortar.

The frieze can be made of plain veneer or con-



DESIGN FOR REMODELING AND VENEERING
OLD STYLE FRAME FRONTS.
old timers in their own localities.

The accompanying design was made for a typical front in the old style of carpentry work. The ceilings of the main story were very high. The basement was a full story. An outside flight of steps led to the front door on the second floor level.



structed of cement plaster on wire lath.

A plaster frieze can be modeled with good effect. It should be done off-hand while being laid onto the metal lath. The centers and grouping of the pattern should first be indicated as shown on the elevation. Then

the carving can be quickly modeled from a sketch. It is not necessary to have all the details correspond exactly if the symmetrical outline is preserved. Fine detail should be avoided.

The long curves should be made at a single sweep.

house this is not necessary, nor desirable.

In No. 6, the brickwork is all reduced to the super yard 9-in. thick, including $\frac{1}{2}$ brick partitions, but a note should be made as to whether there is much stud partitioning, and whether the openings are particularly large or numerous.

Having the particulars before him, the contractor is in a position to arrive at least at a very approximate value of the building of average size, character, and finish, and may adopt either of the four following methods: (A) At so much per cubic foot. (B) So much per square. (C) So much per room. (D) So much per yard of brickwork.

Of these methods, (A), column 3, is perhaps the most common, the measurements being taken from the bottom footings to half-way up roof. Yet in some respects it is the least satisfactory, chiefly on the ground that the figures dealt with are large, and any miscalculation must necessarily result in a mistake of some magnitude.

For instance—apart from an actual error in the figures—in the case of a pair of semidetached houses of 40,000 cub. ft. the pair, the difference between 11c and 12c per cubic foot would be \$400, which is too large a margin to play with. Given the information of the afore-mentioned table, the most satisfactory method on the whole is (B), column 5. The pair of houses of 40,000 cub. ft. would contain eight squares on each floor in each house, a total of 32 for the pair, which at the price of \$4800 the pair is \$150 a square. It is clear that by this method a mistake has not so serious results as by method (A). In the case of a contractor pricing at either \$145 or \$155 a square, the result does not mean a severe loss on one side, nor destroy his chance of the job on the other. Furthermore there is a better opportunity of adjustment of price by adding to or deducting from the price per square.

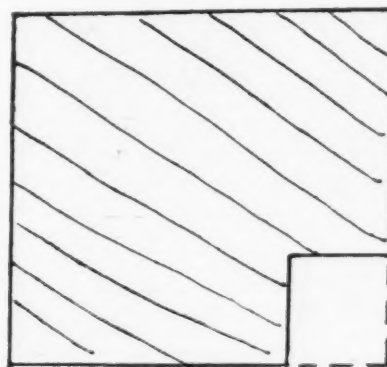
In dealing with out buildings of one story, it is best to cube these, reckoning the main building only by the square. Boundary walls, fencing, entrance gates must be, of course, kept separate in each case, and as these are usually simple and easily measured, there is no difficulty about this.

Sometimes it is the case that the house for the erection of which the builder is tendering is, on the whole, of ordinary materials and finish; but has in connection with it one or two troublesome or expensive particulars—perhaps a dining or drawing-room, done out with somewhat costly fittings, or with carved work. The simplest way is undoubtedly to treat the whole by the square, and add a sum for the particular items.

Method (C), column 7, cannot be considered so satisfactory as the price per square method just given. It is obvious that the size of the rooms is of the first importance. The writer, however, knew one contractor who always arrived at his price by means of this method, and he was guided almost exclusively by the

size of the ground floor rooms. Having a certain price for these rooms, of average size and height, he varied his price per room, according as they differed from his standard. He contended that the size of the upper rooms was necessarily governed by that of the lower rooms. The particulars essential for tendering by this method are the same as those for tendering by the square, and the same remarks apply generally.

The last method, column 9, is very simple and very useful; and given, as already stated, similar materials and finish, there is a very close connection between the price and the number of yards of brickwork. The only thing to be noted is whether the amount of stud partition is unusually large. It might be argued that the number of yards of brickwork would be no guide in the case of the house shown in the sketch; that if



the house was made square—as indicated by the dotted lines—the brickwork, at least in the external walls, would be the same in both cases; yet in that of the square house the space enclosed would be larger, with more floor area, and therefore of greater cost.

In answer to that, there are these considerations: For its size, the house with the irregular outline, has a larger proportion of external walling and external facing; the roof would be likely to be more expensive in labor, more cutting of brickwork and roofing would be required; all of which would compensate for the extra floor space, etc.; and the balance would thus be restored.

These various methods that have been touched upon can only be used for the purpose of arriving at an approximate price; though it may be, and one may say usually is very approximate to the value of the work. Of course they cannot be said to compare for reliability with the proper and correct taking off by the builder of the quantities of the materials and labor required. Still, whether they are not preferable to the often scanty and incorrect particulars called quantities, upon which some contractors have to base their prices, is a question the reader must decide for himself.



An Innovation

The young preacher officiating at his first funeral wished to give friends an opportunity to view the remains, and not liking the use of hackneyed phrases, announced: "The congregation will now pass 'round the bier!"



We would never learn the truth about certain folks if they didn't quarrel occasionally.

A Good Tool Chest

HOW TO BUILD A STRONG, HANDY CHEST OF PROPER SIZE—MATERIAL REQUIRED TO MAKE IT—AND ADVANTAGES OF ITS USE

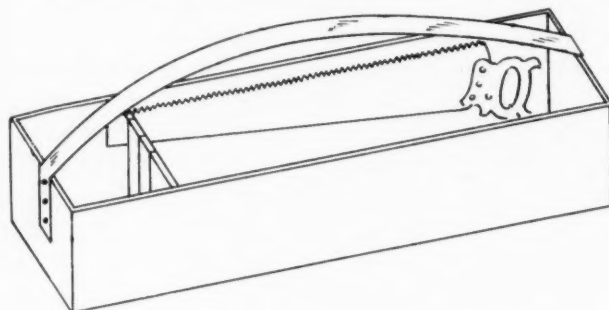
By John Upton

THE ordinary carpenter usually builds himself a tool chest and so is on the lookout for new ideas. I recently built a chest which has some unusual features and believing that a description will interest the readers, am submitting the same. It is intended for use rather than ornament. The lumber was $\frac{7}{8}$ inch thick, $4\frac{1}{2}$ inches wide. The chest measures 36 by 18 inches inside and is 8 inches deep. I cut the pieces 38 by 20 inches long so as to make lock joints at the corners. The lower piece at each end was 2 inches wide. The side pieces had the corners removed so as to lock over these. The corners of the next end pieces were removed and so on, building the chest up in log cabin style.

The inside and ends for the lids were 2 inches wide, halved at the corners. The tongues and grooves were oiled before putting the work together and screws were used for fastening. The usual handles, hinges

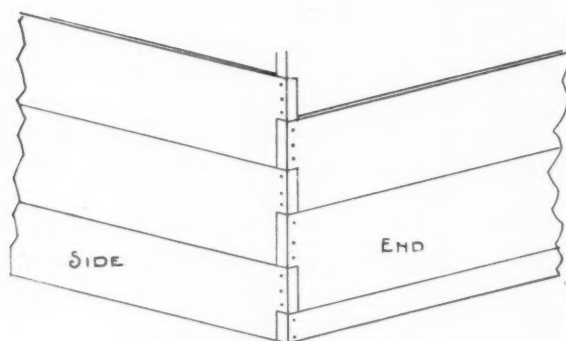
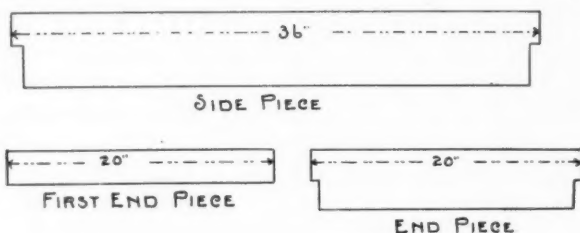
ton to hold the cover shut. This box is for pencils, chalk and several small articles. The other half of the chest contains the loose till, or till box, which is also the saw rack. This box is 36 by 8 by 9 inches outside. It has a place for four saws, a level and other articles.

The handle is a leather strap, which drops down out



LOOSE TILL OR TOOL BOX.

of the way when put in the chest. This chest is just about the right size to hold all of the tools ordinarily needed on a job.



DETAIL OF CORNER,
SHOWING LOCK JOINT.

and locks were used. To help hold the lid in place when the chest is shipped on the train, holes were bored in both chest and lid and dowel pins were inserted so that when the lid is shut down, it is securely held against shoving or chucking. As a further precaution, hasps and staples were put on the front so that two small padlocks may be used to supplement the lock. Wooden buttons were arranged in the lid to hold two squares. A piece $3\frac{1}{2}$ inches wide was put across each end to hold a sliding tray. These pieces help to strengthen the chest, since both bottom and sides are fastened to it, also the handles. The sliding tray occupies one-half the width of the chest and comes up close against the lid when the latter is down. In one corner of the sliding tray, a box is fastened. This has a sliding cover and there is a but-

Mechanical Problems of the Skyscraper

The advent of the six-hundred-foot building has called for an important readjustment of the mechanical transit problem for skyscrapers. The result is a new type of elevator called "the traction," with power machinery located above the shaft instead of in its accustomed place in the cellar. To create ample safety devices for the cars of such a system is a serious problem. The possible precipitation of a carload of passengers from a six-hundred-foot height is not a pleasant thing to contemplate. It is only fair to say, however, that the number of passengers carried in them daily is not large, and also it may be asserted that contractors supplying such installations are of the highest reliability.

Another development which has been brought about in building construction by the very tall building is a scientific treatment of foundations. The execution of this branch of building construction now proceeds from a corps of specialists with adequate equipment to construct as well as design foundations to support the most gigantic superstructures. Fortunately, rock-bottom is not beyond human reach and the stability of the building is biblically assured. And if our present development continues we shall have to go still higher to gratify our ambitions, outreaching the Tower of Babel, but without its disastrous consequences.

A newly-imported wood, used for high-class cabinet and piano work, is the Tasmanian myrtle. It is of a rich pink color, hard and very close-grained.



THE HOME WORKSHOP

Ira S. Griffith

Handicraft Furniture for the Bedroom

PRACTICAL AND ARTISTIC DESIGNS FOR DESIRABLE HOME FURNITURE ADAPTED TO HAND CONSTRUCTION—ENJOYABLE WORK FOR THE SPARE HOUR

WE PRESENT to the readers of the Home Workshop some straight-line pieces of furniture especially suited to the cottage bedroom.

Of all the places in a house, the sleeping apartment—the place where, more than any other part of the house, the most of one's life is spent—should be simply but adequately equipped.

Every piece here described is well within the ability

pieces that can not be prepared by means of the ordinary hand tools found in every journeyman carpenter's box.

In Fig. 1. is shown a cottage dressing table. The size over all is, length forty-four inches, depth twenty-four inches and height sixty-three inches. The mirror is twenty-four by thirty inches. This mirror may appropriately be of either plain or bevel plate glass.

The upper part of the dresser should be made de-



Fig. 1. Cottage Dressing Table and Stand of Simple and Pleasing Design

of any worker in wood. Though much time and drudgery would be saved were it possible for the worker to make use of the circular or band saw, the planer or jointer, the sander, mortiser, etc., etc., yet there is nothing in the construction of any of these

tachable so that the mirror may be properly wrapped and packed should it ever become necessary to ship it. The importance of making such pieces in two parts is recognized by all furniture manufacturers. Two cleats on the back, fastened by means of screws to

the two parts, will suffice to hold the parts together.

Knobs for the five drawers may be purchased at most any hardware store, simple round brass ones will look well.

A rather heavy top should be used—an inch and an

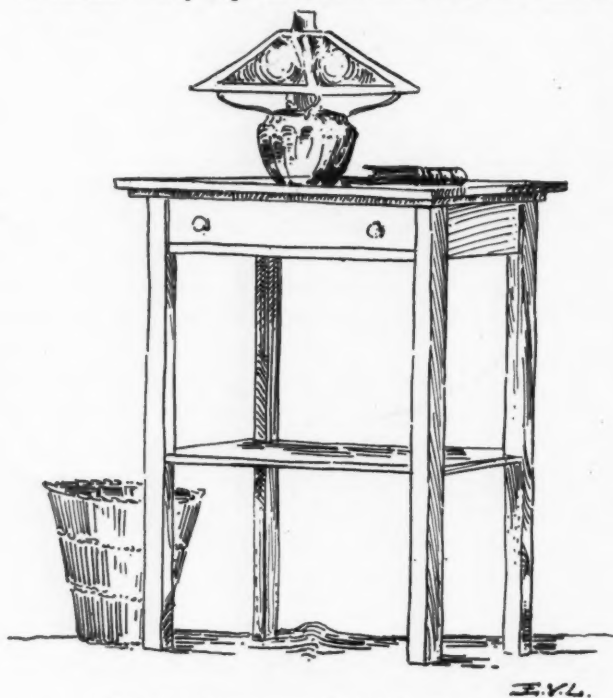


Fig. 2. A Convenient Table—Easily Made

eighth is none too thick. The whole design can be made to assume lighter proportions than are shown in the sketch by making the drawers shallower.

Special fasteners may be had for fastening the mirror to the supports so that it can swing freely. It may not be out of place to remind the inexperienced that these fasteners must be placed quite a little above the middle of the mirror, otherwise the top will swing forward. A very pretty effect is produced by using wooden pins with enlarged heads instead of the metal fasteners. Holes are bored through the supports into the edges of the mirror frame and the pins inserted.

In Fig. 1 is also shown a very pretty round top table especially appropriate for holding flower vases, which when filled with bright flowers add so much to the cheerfulness of a rest room. It may also provide a convenient place to lay the occasional book that one may happen to be reading.

The top of the table is eighteen inches in diameter. The lower shelf is round like the top. The frame is formed by mortising the four top rails into the four square legs. Gains are cut in the legs to receive the lower shelf, dowels and glue being used to fasten the parts.

If we may digress we would call attention to the candle stick holder upon the wall. This is made of brass or copper and in this form is called a sconce. Such little pieces add much to the appearance of a room and are quite easily made. They give a touch of individuality to the whole, especially when the design of the decoration or ornamentation is original

with the owner or maker. In some future number of the Home Workshop we shall give directions for making some of these light arts and crafts metal pieces. The equipment required is extremely simple and it is quite possible the "weaker sex" members in the family of the home craftsman may find peculiar pleasure in assisting in the furnishing of the home or in the production of articles which shall bring a monetary return. Many interesting and useful pieces can be made of metal, such as trays, sconces, candle stick holders, sundials, umbrella stands, etc., etc.

To return to the woodwork, Fig. 2 is a sketch of a table that can be utilized to advantage in most any part of the house, but which is especially fitting for the bedroom. Good proportions would be top twenty inches wide by twenty-seven inches long. The height should be about thirty inches. The design calls for a double top. There is nothing unusual in the general construction.

In Fig. 3 is shown a cottage somno. In out of town places where it is not customary to have a bathroom and appurtenances connected with each bed-room, the somno is not only a convenience but a necessity. The accompanying design is an excellent counterpiece to the table of Fig. 2 and to the other pieces described herein.

The drawer of the somno provides a place for linen and the top a place for washing utensils. The lower compartment is to be made so as to form a tight enclosure, the sides and back being paneled with rails

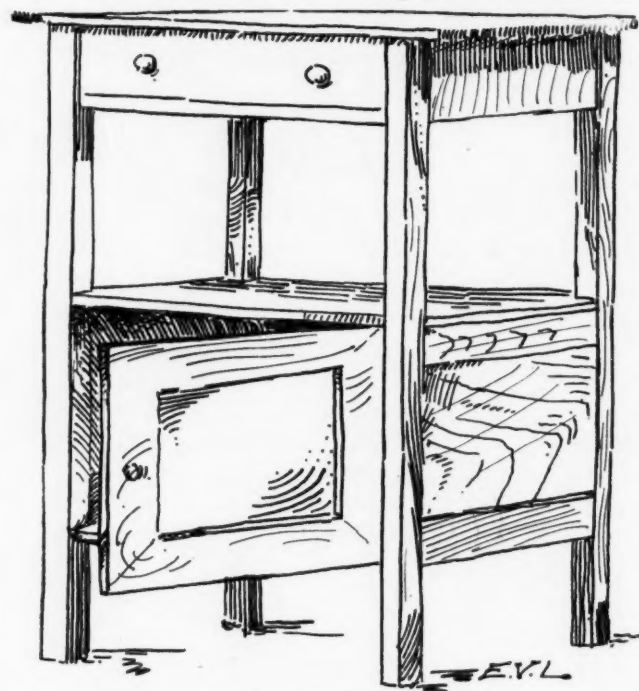


Fig. 3. Desirable for the Bedroom

securely mortised into the legs. Knobs for the paneled door and for the drawer should be got that will harmonize with those of the other pieces of the room—the round brass ones that were specified above would look well, or wrought iron fixtures would be appropriate.

The size of the somno is, top sixteen by twenty inches, height thirty inches.

In Fig. 4 are two other essential pieces for the sleeping apartment—the bed and mirror. The design of the bed illustrated is what is known as twin beds. Undoubtedly the most satisfactory arrangement of beds where two people are to occupy the same room, is to have individual beds. In this case the beds need to be about three feet wide each. This permits of separate bedding and thus obviates the disagreeable features of the double bed with one piece cover.

In many homes, however, especially in the cottage, the lack of room in which to place separate single beds and the added expense of keeping up separate bedding makes it advisable for the householder to make use of the old style double bed. To many such people, the desirability for the single beds is still recognized. They may find a compromise in which the head and foot parts of the two single beds are combined into one piece each, the middle post suggesting what they recognize as desirable, while the construction admits of

man of business to proclaim "out of season" and without excuse that he is honest.

The side rails are to be made with fasteners at the ends such that they can be easily detached from the foot and head. Tradition tells of an amateur who once made a bed, mortised and framed all of its parts together in his shop and otherwise completed it only to find he could not get it out of the shop door.

The necessity for the mirror, Fig. 4, will undoubtedly appeal to the ladies rather than to the men. As in the dresser, plain plate or beveled plate may be used for the glass. Eighteen by forty or fifty inches is a good size for the glass.

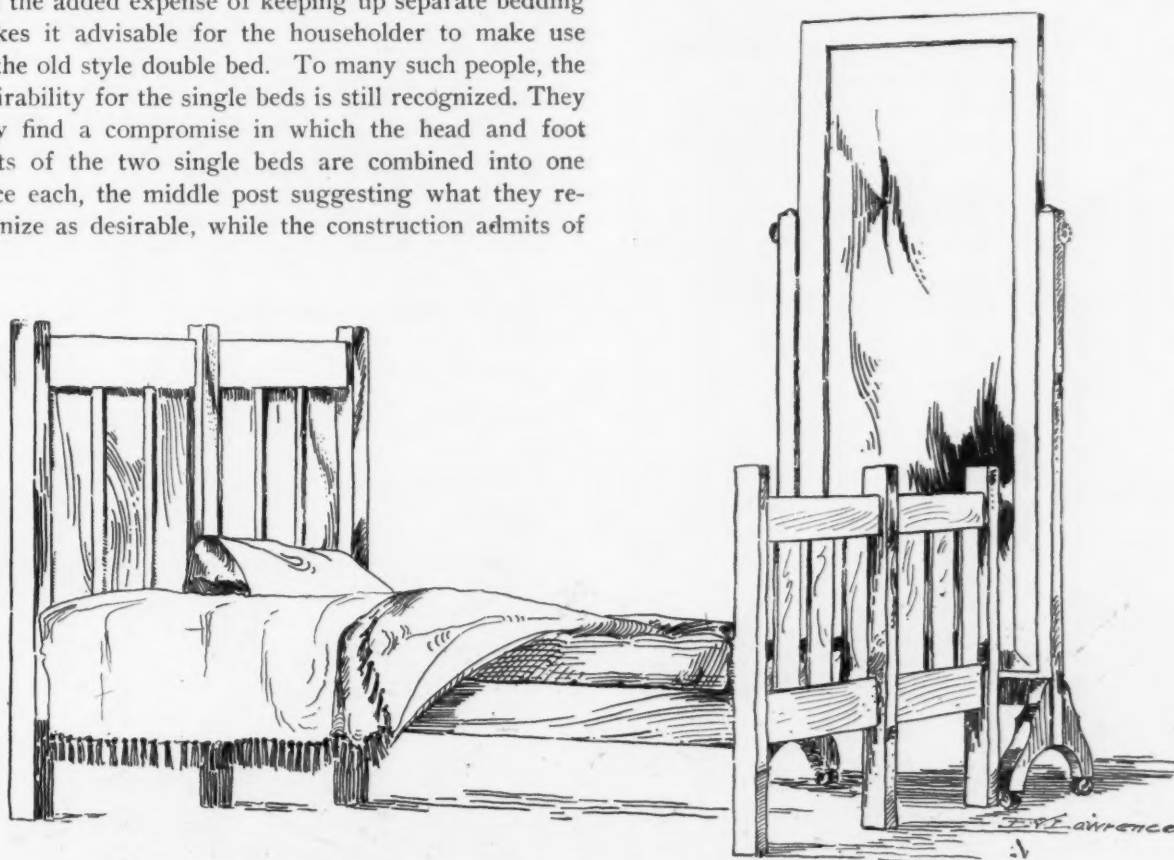


Fig. 4. Bed and Mirror in the Mission Style—Suitable for Hand Construction

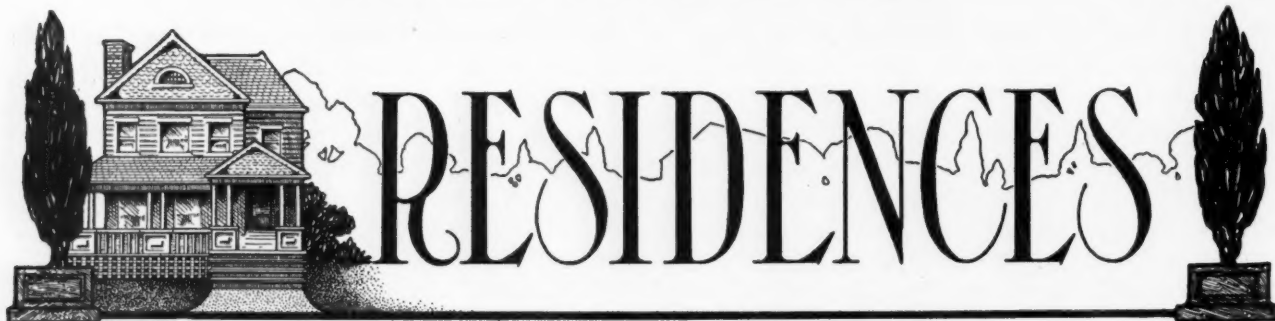
the advantages pertaining to the old style.

The parts of foot and head pieces ought to be mortised and tenoned and pinned. There is no occasion for trying to conceal the dowels which serve as pins. Since honesty is one of the fundamental things to be sought in craftsman furniture, the presence of the pin head is an indication of honest effort toward strength. There is no necessity for going to the extreme that one prominent and reputable furniture house goes—the pinning of all tenons. There is no occasion for pinning small tenons where great strength is not a necessity. To do so and to emphasize the presence of the pins on such occasions is not excusable from any point of view. Honesty in furniture, like honesty in anything else, is desirable and essential, but to "go out of your way" to call attention to your efforts to produce honest furniture is as reprehensible as for the

The supporting frame must be firmly fastened together. The curves of the feet may be cut with the turning saw and firmly fastened to the uprights. The weight of mirror will demand that metal fastenings be used as swing pivots. These can be got with ornamental heads. They must be placed above the center of weight, somewhat.

The builder of these pieces of furniture must decide what wood he wants to use in making them. Probably no wood is more easily obtained or gives more pleasing results when fashioned into furniture than oak. It is a low priced wood too, when compared with mahogany and other similar woods. Quarter-sawed white oak is preferable for furniture, though plain sawed is very appropriate for this style of furniture.

All the pieces which are built for the same room should be made from the same kind of wood.



Bungalow and House Designs

PHOTOS AND FLOOR PLANS OF ATTRACTIVE LITTLE RESIDENCES THAT HAVE PROVED PRACTICAL AND SATISFACTORY—DETAILED STATEMENT OF COST

WE ARE showing this month the plans of a bungalow built by I. P. Hicks of Omaha, Neb., which, for convenience, style of architecture and genuine beauty of design, stands very high. It has large rooms, large closets, large pantry, large bath room, large reception hall, good wide porches, in fact it is a model plan for a bungalow. The main part of a bungalow is the first floor arrangement, not much in a general way being expected on the second floor. In this design, however, we have secured three large sleeping rooms with ample closet room on the second floor.

There is a grade entrance to the cellar under the

incidentally, may have the heating plant to look after a part of the time.

The pantry is very large, with a corner in it for the ice box or refrigerator, and is provided with an outside door so that the ice man can fill the box without going into the kitchen. The pantry shelving is enclosed with glass doors and fitted up in fine shape. The chamber on the first floor is exceptionally large and roomy, provided with an immense closet with a window for light and air, something essential for a real good closet.

The bath room is of a very good size, and is nicely located for convenience. The second story hall is



Artistic Bungalow, Having Three Rooms "Under the Roof"—Cost \$3,350, at Omaha

main stair landing, so that it is not necessary to go through any part of the house to get in and out of the cellar while disposing of ashes from the heating plant or in stocking up with vegetables for winter use. This entrance leads also to the main hall, so that one may enter the house that way if so desired. There is another entrance provided to the cellar from the kitchen, just to make it handy and convenient for the people who work in the kitchen and pantry, and who,

large and well lighted by the window in the stair landing, the large well hole and the double dormer in front of roof. With transoms in the doors leading to the chambers it makes it possible to get a very good ventilation in these second story rooms. There is a cellar or basement under the entire house divided up into boiler room, coal bins, vegetable cellar, basement toilet and a fine laundry room.

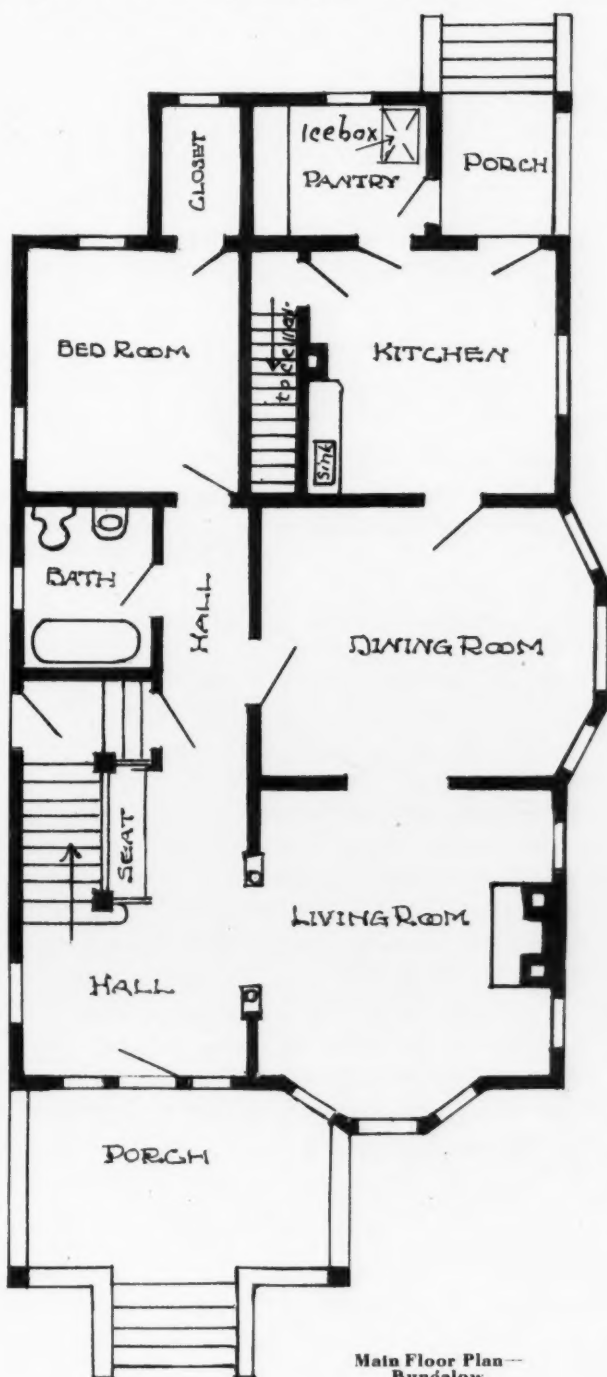
In a brief way now, without going into all the de-

tails, we will give the cost to build this house, showing how the figures are obtained.

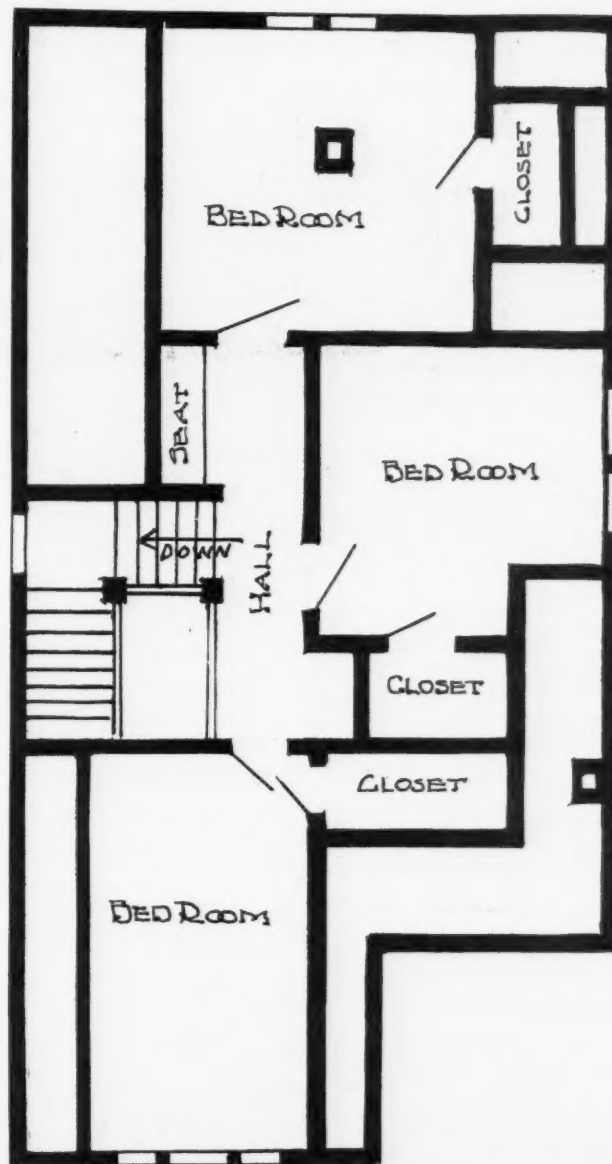
The reception hall, parlor and dining room are finished in plain red oak, balance of house in yellow pine.

The Estimate

Excavating, 260 yards at 25c.....	\$ 65.00
13,000 brick laid in foundation, \$12.....	156.00
2 Chimneys	80.00
Cellar cementing	55.00
Basement partitions	35.00
Doors in basement	30.00
Windows in basement	25.00
15 squares first floor oak finish all complete @ \$16	2.40
5 squares first floor yellow pine finish @ \$10..	50.00



Main Floor Plan—Bungalow



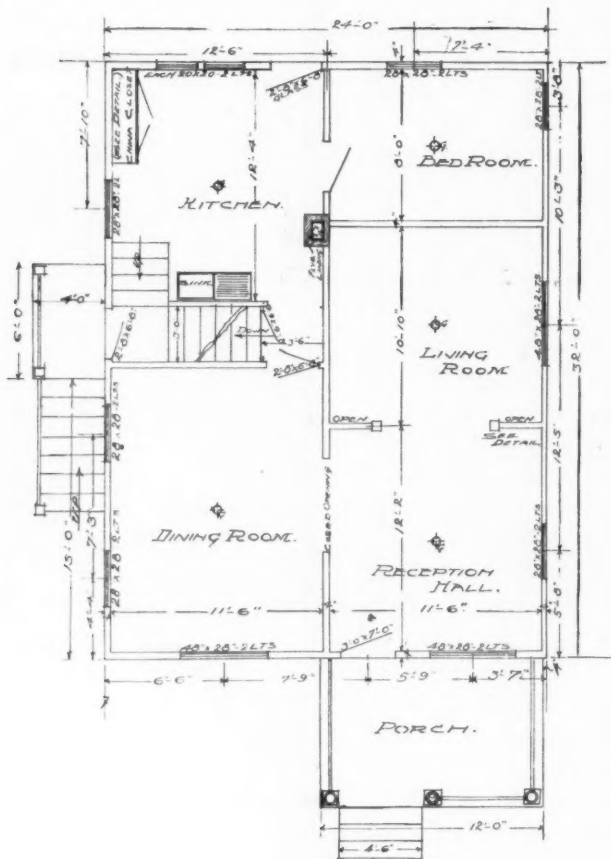
Second Floor Plan—Bungalow

15 squares second floor yellow pine finish @ \$10	150.00
20 squares outside walls @ \$9.....	180.00
25 squares roof @ \$11.....	275.00
25 squares partitions @ \$4.....	100.00
Work on front porch and gable	50.00
Main cornice 170 feet @ 40c.....	68.00
Rear porch	15.00
Front door complete	26.00
Frame and side lights.....	12.00
9 window frames with sash and casings all complete @ 11.....	99.00
3 outside door frames, doors and casings @ \$12	36.00
6 window frames, sash and casings.....	54.00
3 dormer frames with sash and casings .. \$10.	30.00
1 cased opening with columns and pedestals..	40.00
1 cased opening.....	10.00
5 inside doors, oak finish @ \$12.....	60.00
9 inside doors, pine finish @ \$9.....	81.00
Work in pantry.....	40.00



Nine-Room Boarding and Rooming House at Gary, Ind.

Front stairs	\$ 80.00
Cellar stairs	25.00
Oak base	30.00
Pine base	40.00
Picture mold	10.00
Plastering	216.00
Painting	200.00



First Floor Plan—Boarding and Rooming House

Plumbing	300.00
Heating (hot water)	310.00
Electric wiring	45.00

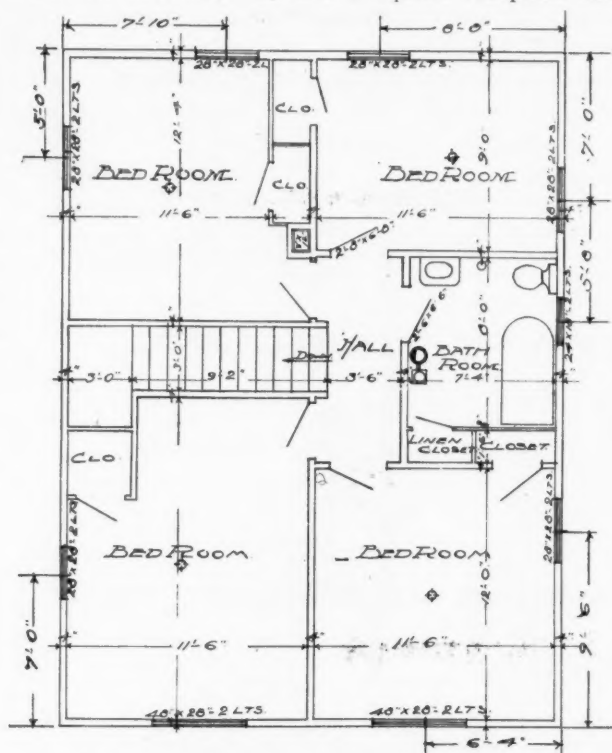
Tin work	60.00
Incidentals 5%	158.90

Total cost.....\$3,336.90

Satisfactory Boarding and Rooming House

In connection with this we are showing the photo, floor plans and details of construction of a neat, nine-room house, designed by Mr. J. E. Hammons, of Gary, Ind., and intended for use as a small boarding and rooming house.

On the first floor is, first a square reception hall,



Second Floor Plan—Boarding and Rooming House

off of which to the left is the large well-lighted dining room. The kitchen is large, well equipped and conveniently located.

The second story is divided into four large bed rooms, each with closet. The bath room is centrally located. The striking feature of this design, adapting it to the purpose for which it was intended, is the outside stairway leading to the landing and the second floor. This landing is reached also from the kitchen.

Something New

Plans have recently been made for a country dwelling near New York, which will have disappearing partitions on the ground floor. The partitions will be operated by electricity, lowering them into the basements, thus giving an unobstructed floor space of the entire area. If this proves practical and architects and builders find the idea at all feasible, it may be quite an innovation to home builders.

The modern house with the ground floor practically unpartitioned, except with hangings, has its disadvan-

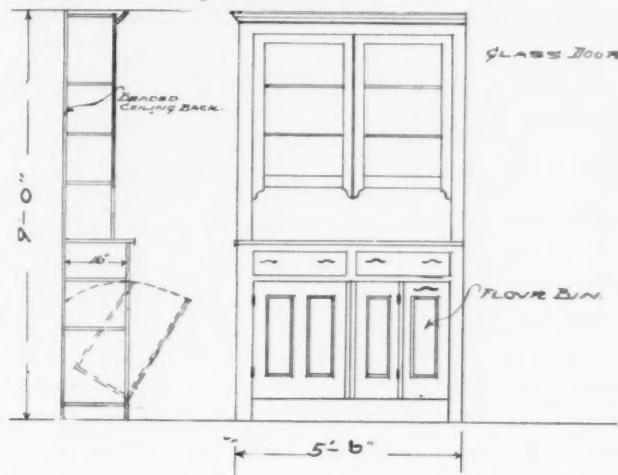
tages. The dining room opening into the parlor is not always desirable at meal time. It is almost impossible to make a business engagement or have a private interview with an outsider at home. Even if the family consents to repair to the upper story an untimely caller puts an end to further discussion. The old fashioned plan of chopping the ground floor into innumerable little halls and rooms was unsightly and unlivable. If a moderately priced home can be constructed which will be suited to the needs of entertaining, afford a comfortable dwelling place, and give the desired privacy at required terms, it will be a boon to the community at large. It is therefore, with a great deal of interest that this new experiment is being watched.

A Luminous Clock

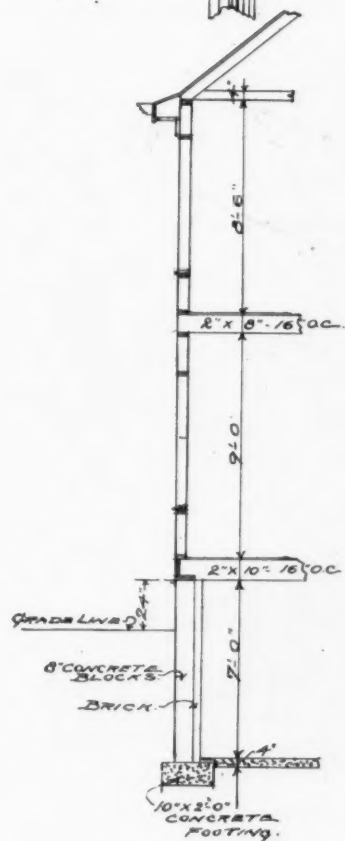
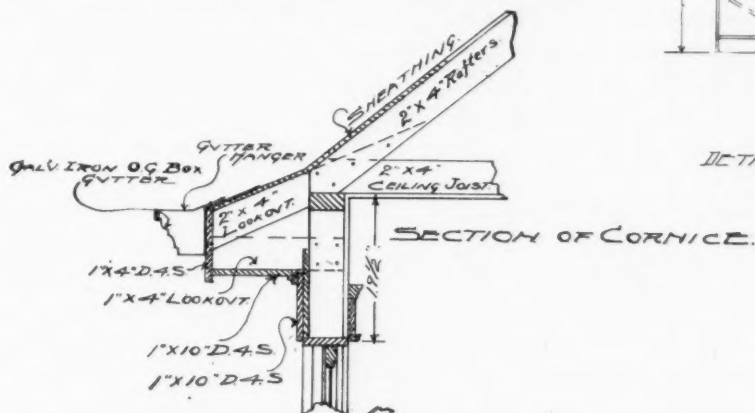
The Eiffel Tower in Paris is now being used for another practical purpose. On the sides of the second section, hundreds of feet above the ground, a luminous clock warns the gay Parisian of the passing span of

life. The apparatus flashes forth every minute in huge figures visible a great distance. This system was found the only practical one, as the ordinary clock dial would be indistinguishable at such a height.

A Mrs. Leggett ripped her sheath gown while running for a train in Pennsylvania. Any woman of that name should know more than to wear a dress built on the architectural plan of the directoire.



DETAIL & ELEV. OF CHINA CUPBOARD.



Front Elevation—Boarding and Rooming House



CEMENT BUILDING CONSTRUCTION

Cement Bungalow for Two

PRACTICAL DESIGN FOR A COZY LITTLE DWELLING OF REMARKABLE CHARM AND CONVENIENCE—
ARRANGEMENT TO SECURE PRIVACY ON A CORNER LOT

By John Lawrence Heaton

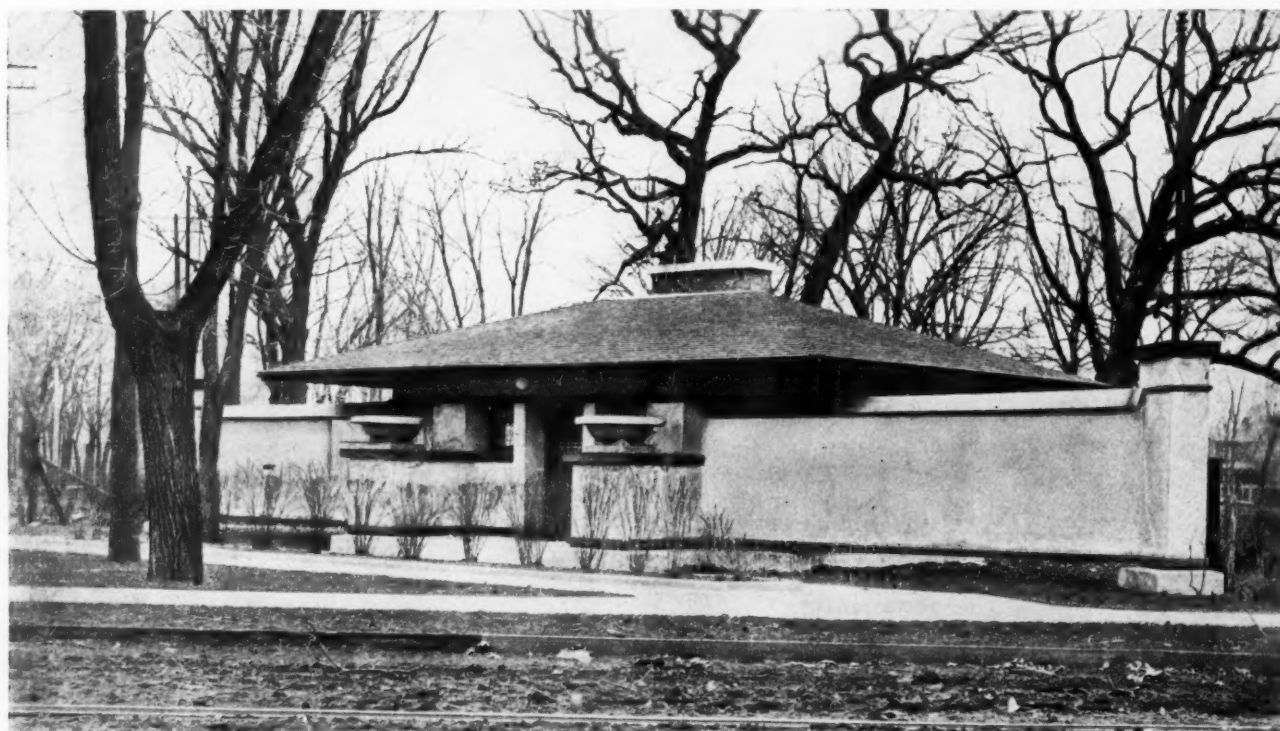
THE bungalow seems to be the favorite type of dwelling with those people who have money to spend upon whatsoever their fancy dictates. This type appeals to many undoubtedly because it has a reputation of being the "latest," just a little out of the ordinary. There are certain conditions, however, when the bungalow type serves its owners better than the usual two storied type of dwelling.

In connection with this is shown a floor plan that is especially suited to a young couple whose family needs require but one bedroom aside from the usual guest chamber. The rooms being all on one floor make it possible for the young wife to care for the house without the need of those unsatisfactory adjuncts, servants. In this day of simple living, or the desire for simple living, the fewer persons outside of the family there are, the better. There are no dreaded stairs to climb many times each day. Everything is

at hand so that a few steps on the same level brings them within reach. This arrangement ought also to appeal to the elderly couple who desire a cozy place in which to spend the remainder of their days after the children have left and the old home with its numberless rooms is no longer needed or desired.

The setting of this bungalow is rather unusual. Frequently, one finds himself possessed of a corner lot which has desirable frontage on each street. He does not wish to offend neighbors in either direction. This setting solves the problem, both streets being treated alike, the building having easy access from either. Privacy is obtained by means of two wings which extend from either side of the building almost to the street line. Along the walks are walls of shrubbery.

Cement walks lead to the front entrance. In front of this entrance and screening it from the public view is a bed of shrubbery. The edge of this bed is a low



Cozy Little Five-Room Bungalow of Cement—Walls and Shrubbbery Give Privacy

cement curb. The rear walk of cement, like the front one is readily accessible from either street; there is no unnecessary walking, no matter from which street one may approach.

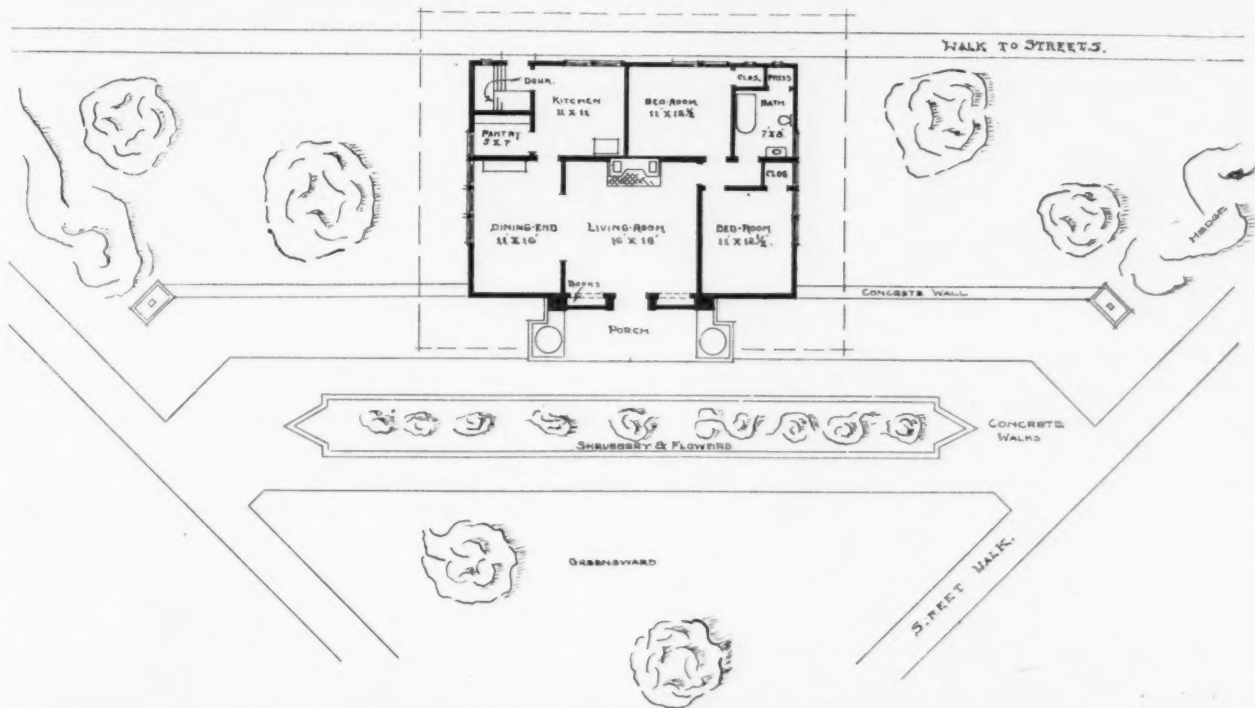
The floor of this bungalow is but one step removed from the ground, the object, as in the other arrangements, being to make for easy living.

The broad cement step is flanked on either side by massive pedestals. Upon these are vases that are filled in the summer time with bright flowers, green foliage and trailing vines. The roof hangs low; the eaves extend far and cover the cement platform which, banked by flowering vases on either side and shrub-

has three flues, one each for the fire-place, the kitchen range and the furnace.

The dining room is really a part of the living-room, the partition between being merely a suggestion of one to give to the interior a symmetrical arrangement. Below, it is paneled to correspond with the other walls of the living room. Above the paneling is an arched effect partly filled with art panels.

The bed-room arrangement is such as to permit of greater privacy than is usual in one floor plans. Entrance to the bath is private yet readily accessible from either bed-room or the living-room. Should any door be left open, as frequently happens, callers sitting in



Five-Room Cement Bungalow Arranged for Corner Lot

bery in front, forms a most inviting retreat as well as an entrance.

The walls of the building are of cement on wood lath. This cement is finished by rough troweling. The trimmings are of undressed lumber creosoted a deep brown. The roof is shingled. Such a design might well be made monolithic and fireproof. The floor could be reinforced and the partitions built of hollow tile. The roof could be of soft green tiling that would harmonize with the rest of the exterior. It might have its walls constructed of concrete blocks made without facings. The whole could be afterward plastered with cement so as to produce the effect shown in the photograph.

The entrance to the living-room is direct. The upper part of the door is of leaded plate with just a touch of color. The lines of this, as in all the other art glass, are horizontal or vertical, depending entirely upon the spacing for effect.

The fire-place is centrally placed and is intended for use. It is the main feature of the living-room. The chimney shows above the roof low and massive and

the living-room cannot see into these rooms. There are plenty of closets of good size, all of which are lighted and ventilated directly.

All windows are of the outward swinging casement type, set rather high—not so high but that one can see out when standing. They are grouped in fours for interior convenience as well as exterior effect.

There is a pantry convenient to kitchen and dining room. The basement needs to be excavated only under that part which is to become the furnace, fuel and wash rooms.

To the small family seeking comfort and convenience with the least expenditure of energy—yet wishing to be able to live well—these suggestions are offered.



Slight Mistake

"Oh," exclaimed the fair boarder, as a couple of calves scampered across the meadow. "What pretty little cowlets!"

"Yew air mistaken, ma'am," said the old farmer. "them's bullets."

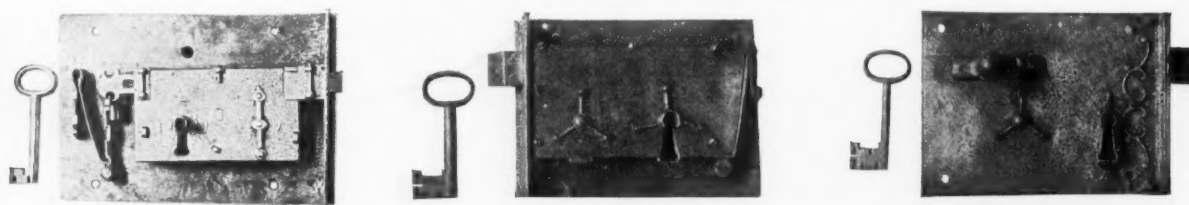
Modern Builders' Hardware

ITS DEVELOPMENT IN MECHANISM AND DESIGN—IMPORTANCE OF HARDWARE IN MODERN BUILDING—METHOD OF "TAKING OFF" HARDWARE FROM PLANS

"NEVERTHELESS it does move," said Galileo, referring to the earth; and if that old Italian should step today into a well-equipped hardware establishment, and should examine the line of modern builders' hardware—comparing it with the offerings of former times—he would surely have to repeat, "Yes, she certainly does move!" The writer (without presuming to claim identity, nor even relationship, with that famous astronomer) noted the remarkable development and improvement, himself, not long ago, when, at the invitation of the Stebbins

if the contractor had his way—a cheap, characterless line of cast iron or stamped metal was furnished, to the future torment and disgust of the owner's wife; or, if the owner had his way, rising up in rebellion and insisting upon sturdy hardware, of design and finish suited to the needs of each room—the contractor lost money on the job.

But those times are past, or are rapidly passing; and it is well! Consider the place, in the finish of a house, held by builders' hardware; the whole effect and appearance of a room, otherwise good, may be



16th Century Hand-Forged Locks—Locks Weigh 16 Pounds Each—Size 10 by 15 Inches

Hardware Company, of Chicago, he was enabled to examine the complete line of builders' hardware put out by the P. and F. Corbin Company.

The most striking feature, to the layman, the non-builder, was the display of some old sixteenth century hand-forged iron door locks, brought from Heeswijk Castle, in North Holland; these, placed beside the newest improved bronze Unit lock, having the key-

hole in the knob, made an interesting basis for comparison, and showed forcibly the development from the old to the new.

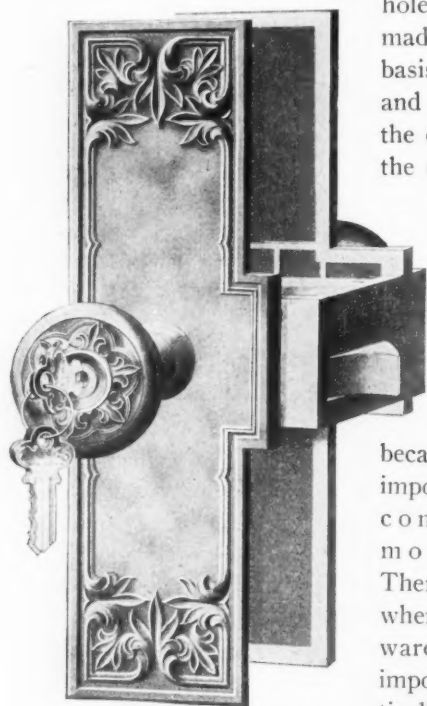
The contractor and architect, however, were vitally interested in all the modern builders' hardware, of and for itself, because of the very important place it has come to occupy in modern building. There was a time when builders' hardware was of so little importance that practically no thought was given the subject at

spoiled when capped off by incongruous fixtures; on the other hand, door knob and escutcheon, cabinet hinges and fastenings, and various other metal work, if properly chosen, add just the touch of richness needed to complete the effect.

Realizing this, the manufacturers have spared no pains to design builders' hardware to harmonize with all the schools of ornament in architecture, ancient and modern; they range from the severely plain Colonial and classic Greek to the flamboyant exaggeration of the last stages of the Rococo. Grecian, Roman, Moorish, Flemish, Gothic and Elizabethan ornament, art of the Renaissance and L'Art Nouveau have been drawn upon.

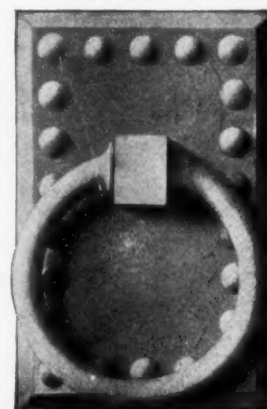
What Finish to Choose

The selection of proper finishes of hardware to best suit the various kinds of woodwork has become a perplexing problem. As in everything else where ornament and color are involved, the selection is purely a matter of individual taste, there being no set of rules to govern a choice except the generally recognized rules of harmony and contrast. It is always safe in selecting the finish of hardware, to adopt that which is near the color of the woodwork as possible, or directly opposite. For instance, with the light domestic woods, such as oak, ash or pine, if used in their natural state, the plain brass or bronze hardware without any surface finish



The Modern "Unit" Lock

all; a small sum was lumped on at the end of a contract to cover "locks, hasps, hinges and necessary hardware fixtures, all to be of substantial quality and of design approved by the owner;" then—



Door Knocker
Arts and Crafts Design

is most appropriate, although the lighter shades of oxidized brass may be used to good effect.

With oak, treated in what is generally known as red oak, antique oak or Flemish oak, the writer would advocate the use of the light or dark finishes of oxidized brass or plain natural

bronze; or, to produce a contrast, the black iron finish is good.

With dark imported woods, such as mahogany, three finishes have been used—gold, light silver and plain natural bronze. A new departure, which is really a revival from Colonial days, is the use of cut glass for door knobs; this makes a beautiful effect with mahogany or walnut. For enameled woods, whether in white, gray or pearl, gold or light silver finishes are most used; and are certainly in most excellent taste.

Occasionally now the architect states very carefully in plans and specifications just what all the hardware is to be; very often, at the request of the owner, its selection is left to the contractor. If you would produce a satisfactory piece of work—even though some economy is necessary—do not economize on the hardware items. And do not be content with the same old patterns and fixtures you have been using for a dozen years; there are new designs now, adapted to every finish and

to every style of building construction.

System of "Taking Off" Hardware

Although the architect may have specified all the hardware very carefully, it still remains for the contractor to figure the cost—if he would be on the safe side of the contract—and then be prepared to furnish the goods. To do this he should make out an itemized schedule, guided by the plans and specifications. The following is that part of the prize winning article—in a contest recently held by the P. & F. Corbin Company—which tells how to make schedules of hardware from plans and specifications of buildings:

The schedule should be compiled from the plans and specifications for the building. Make an accurate copy of hardware specifications, and read carefully the carpenter specifications, making note of such items as concern the hardware.

The drawings should be carefully studied until you are familiar with the building, its general lay-out, the arrangement of the rooms and for what they are intended.

Begin with the basement, and take off each floor in succession, ending with the attic. Take off the exterior doors first, making note of those having transoms, commencing with front and working to the right until all are taken. Take off the exterior doors, making note of those having transoms, commencing at a certain point on the front and working to the right until all are taken.

Take off the number of closets and rooms requiring coat and hat hooks.

Take off the cabinets, commencing at a certain point in front and working to the right as before.

Take off the exterior windows, commencing on front and working to right as before. Take off interior windows, if any. Take off skylights and scuttles. Take off stair rail brackets.

In taking off hardware the following details should be noted:

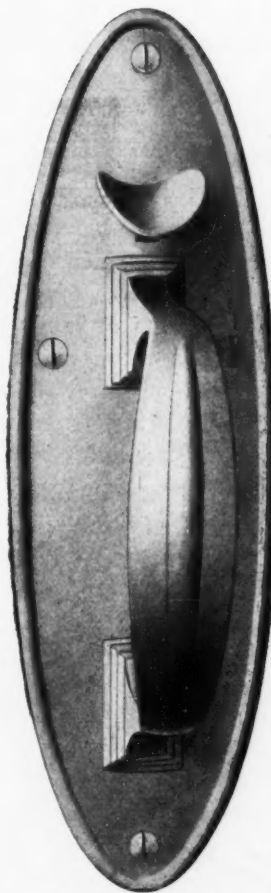
Single Hinged Doors.—Thickness and hand, and size of butts necessary to clear trim.

Double Hinged Doors.—Thickness and hand, height, and if doors are rabbeted, bevel or flat, and size of butts necessary to clear finish. In taking off hinged doors, care should be taken that they be scheduled to show into which room the door swings. As for example, a door between bath and bed room and swinging into bath room, should be scheduled as "door, bed room to bath."

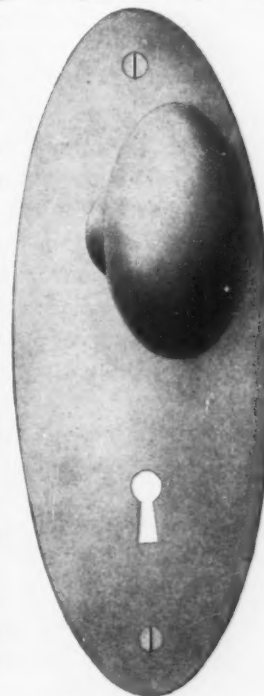
A door requiring a split trim should have butts and lock front to match finish of room into which the door swings.

Sliding Doors.—Single or double, width of opening, thickness, width of stile, and if doors require flat or astragal locks.

Double Acting Doors.—Thickness and width of stile, and size of bottom rail when kick plates are to be used.



Door Latch—
Pure Colonial



Puritan Design, Dull Brass
Finish—Very Rich



Graceful Flower Motif
Bronze Finish

Transoms.—Thickness, height from floor to center of transom. State if hinged top or bottom, or hung on centers. See details and note if special arms are required.

Cabinets.—Get complete details and note the following: In case of doors, slate thickness and hand, width of stile, and if flat or rabbeted locks are required, double or single, and size butts necessary to clear finish. In case of drawers, state width and thickness and drop required for locks.

French Windows and Casement Windows.—Get complete details and state thickness, hand, height, width and form of stiles, kind of lock front required,

and whether the windows swing in or out.

Windows in Box Frames.—Thickness, width of bottom rail, and note detail of meeting rails.

Miscellaneous.—Such items as coat and hat hooks, base knobs, window pulleys, window-stop adjusters, rail brackets, etc., should be scheduled as miscellaneous.

When plans or specifications are not understood, where openings are not provided for, or details not clear, or when plans and specifications conflict, you should make note of same as you proceed with the work, and when you have finished taking off the plan, submit these items to the architect for his decision.

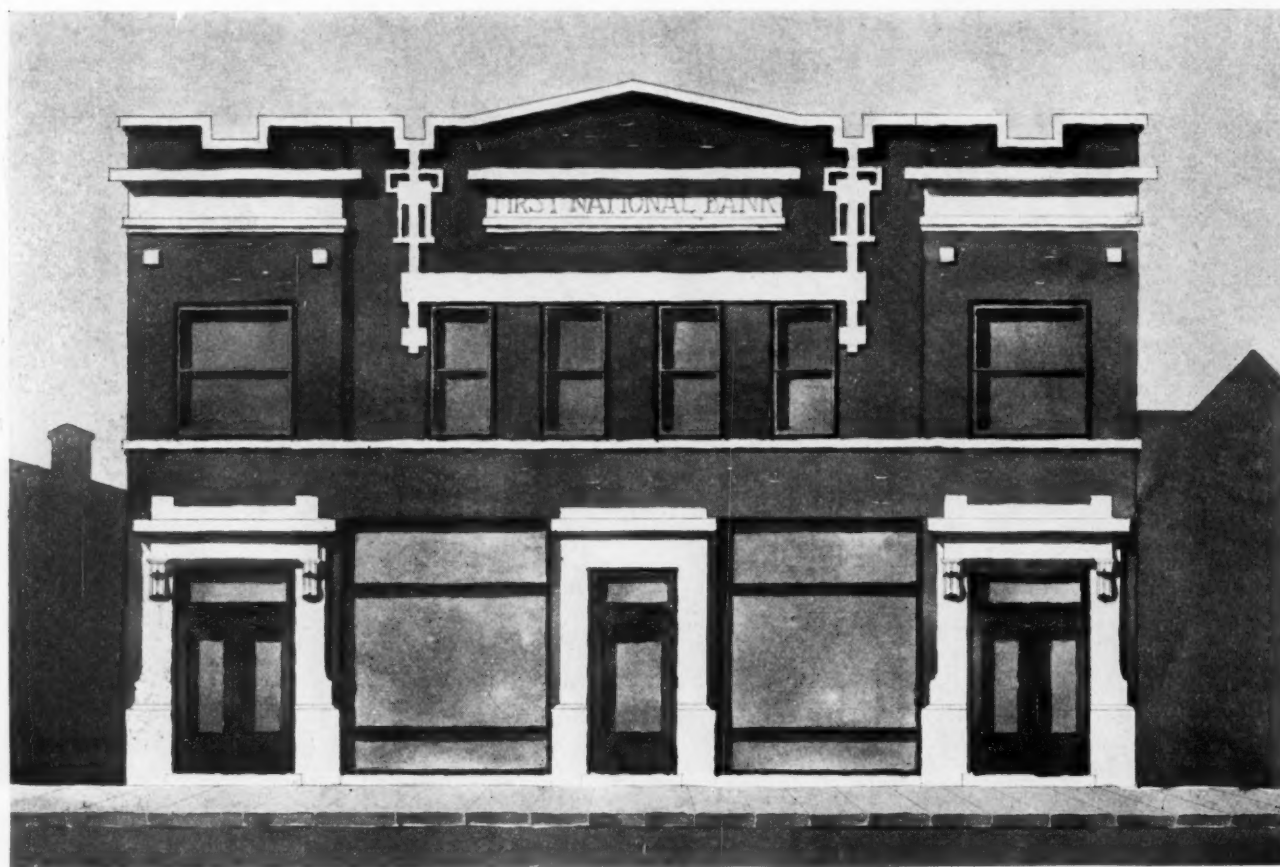
Village Bank and Store Building

PERSPECTIVE AND FLOOR PLANS OF A MODERN WELL-DESIGNED COMBINATION BANK AND STORE BUILDING WITH FLATS ABOVE

IT HAS been said that the prosperity of the nation is dependent on, and is indicated by, the prosperity of the farmer. In olden times, the farmer's prosperity was gauged by the number of his cattle and by the size and condition of his barns. In recent times, however, he has emerged into the real financial world as a money saver and owner, and so has become a mighty factor in banking circles. With this development, naturally, the village bank has grown in importance and in number.

The design by G. W. Ashby, architect, which we present herewith, is one that is especially well adapted to the needs of a banking building for town or hustling village. It combines on the first floor a modern banking establishment and a large well-lighted store; while above, on the second floor, two nice five-room flats are provided. The whole makes a trim little building, at once attractive and dignified.

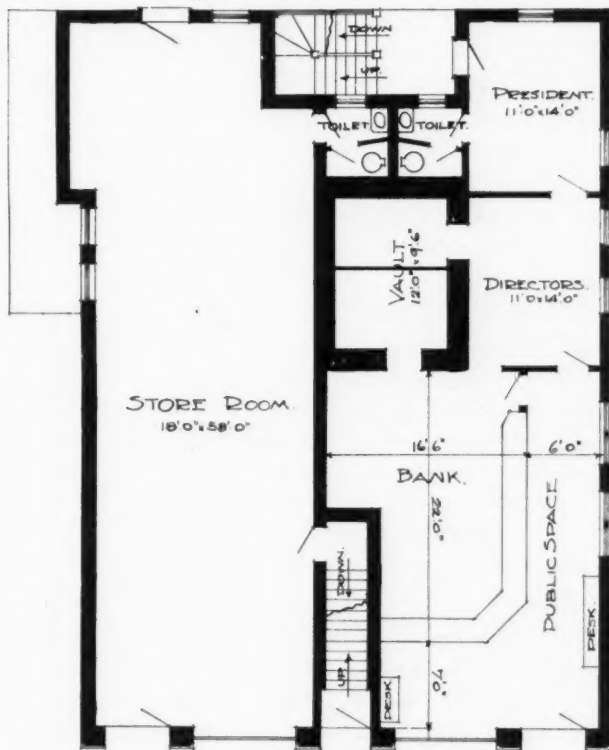
The material of the exterior is buff pressed brick with trimmings of Bedford stone. The floor plans,



Combination Bank and Store Building—Dignified and Businesslike in Appearance

which are here produced, show the good features of modern, convenient arrangement. They need little

however, are likely to step in before such a limit is reached, for on a 200 square foot plot this 2,000 foot



First Floor—Bank and Store Building



Second Floor Flats—Bank and Store Building

explanation, being clearly drawn to scale.



Skyscrapers May be Too Tall

A building expert well known throughout the country in a recent paper read before the Institute of Architects states that New York will never have an office building one mile high in spite of all the talk to that effect. Under the present building code the limit of height of any building is absolutely fixed at 2,000 feet or about two-fifths of a mile and in the view of the present outcry against the latest freak buildings it would seem that investors will not hastily put money into much larger buildings than the present ones until it has been demonstrated that they can be made profitable.

Geologists state that there is one sufficient reason why New York will never have any of the mile-high buildings that are predicted for the next century as the city does not rest on a too firm basis. Beyond a certain point it will be absolutely impossible to rest additional weight on account of the danger of the lower strata, which composes the island of Manhattan, from sinking into the sea.

The limit of this weight it has just been figured out amounts to a foundation pressure of the enormous amount of fifteen tons to the square foot. On a building lot 200 feet square, which is about the limit in the already crowded downtown district, this will mean a maximum height of 2000 feet. Beyond this the very nature of the city's base will call a halt. Other factors,

high edifice would cost \$60,000,000. It would weigh, according to present estimate, 516,000 tons or more than twice the tonnage of the present navy. Moreover, the wind pressure on any one of its walls would be more than 6,000 tons. Altogether, such a monstrosity is made almost impossible by its physical limitations and it hardly seems probable that any New York skyscraper will ever exceed 1,000 feet, provided, of course, that the present building laws are not so restricted as to make the toothpick office building out of the question.



Advertising

Does advertising pay? Well, I should say it does! Last week a Bement, Illinois, merchant advertised fresh dairy butter for sale. The compositor substituted an "h" for a "d" and the ad read "Fresh Hairy Butter for Sale." A smart barber called up the grocer and offered to shave the butter at standard rates. The grocer got mad and licked the barber, breaking his nose and otherwise disfiguring him so that he was compelled to call upon the doctor, who charged him a tenner for the services rendered. The next day the barber met the editor on the street and threw a brick at him, giving him a close shave. In his effort to get away the pen pusher fell down, tearing his trousers on the west side so badly that he was necessitated to buy a new pair; also the editorial shears, which were in his hip pocket, penetrated his anatomy so that the services of a surgeon were required. And all the result of one little ad. Who asked, "Does it pay to advertise?"

Principles of Heat Engineering

A PAPER READ BEFORE THE AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS—STRAIGHT TALK FOR HEATING CONTRACTORS CONCERNING HEAT INSTALLATIONS

By J. D. Hoffman

THE science, if such it may be called, of heating and ventilating engineering, is one that is founded almost completely upon the laws of thermodynamics. It is not what one might call an exact science; but, in its rational design and application, the engineer may work with a reasonable degree of exactness. Most of the points of interest in the subject may be theoretically developed; yet, as in all branches of engineering design, some parts require theory modified by good judgment and the personal equation of the designer. In such cases experimental data, found by tests upon similar apparatus, are not only good things to apply as checks, but at times are absolutely necessary because of the lack of any rational information on that part of the subject. Fortunately, such cases are the exception rather than the rule, for with the properly applied principles of thermodynamics there is scarcely any part of the subject which it not possible of rational solution.

Because of the fact, however, that some features of the work are as yet experimental and not as definitely understood as they should be, this is no reason why those who install heating and ventilating apparatus should disregard *all* laws and feel justified in installing a job that is empirical in all its parts, and one which shows scarcely any of the earmarks of theoretical investigation. The time has surely come when it may be demanded of all men who install such apparatus that they follow closely to fundamental principles and be prepared to furnish proof for any step taken in their work.

The Letting of Contracts

Contracts for heating and ventilating apparatus usually are let in one of the four following ways: (a) Some person, called for convenience the *dealer contractor*, draws up a rough layout of the work, guarantees to install satisfactory apparatus for a stated amount of money, buys his apparatus from the manufacturer, installs it according to his own personal ideas, or according to the plans laid down by the manufacturers, and in a general way guarantees it to give good service; (b) a manufacturing firm draws up a plan and contracts to install, for a stated amount of money, satisfactory apparatus, usually made by the same company, guaranteeing its successful operation; (c) a responsible engineer is retained, who draws up plans and specifications for the work, and, upon competitive bids, the successful contractor installs the apparatus in accordance with these plans and specifications, the engineer being the judge of the quality of the work and materials; (d) a responsible engineer designs the system and assumes all the responsibility in its erection,

looking toward a certain required output or result. Materials are purchased in the open market and installed to his satisfaction, and after completion, if the final tests are acceptable, the purchaser pays the bills and takes charge of the completed plant. The last method is not much used in heating and ventilating installation as yet, being confined largely to power and manufacturing plants where a certain definite output of finished material is desired, and will not be further discussed; methods (a) and (b) being applicable to small installations and (c) to larger and more important ones.

Residence Heating by Furnace

Of all the uncertain and *rule-of-thumb* installations, probably the furnace heating of residences can claim the greatest share. Competition among the furnace manufacturers has been so great that we have the country flooded with furnaces ranging in quality from good to positively bad. In order to place the furnaces, it has been the desire, and this is a legitimate one, to simplify construction, to remove features not absolutely necessary, to cheapen manufacture, and in many cases so to rate the furnace that the claims could be realized only under the best conditions of installation, such as would be expected under test conditions and not under conditions as found in average service. Of the above-mentioned points, the last one should not obtain in any case, since a furnace should be so rated as to realize its claim even under somewhat unfavorable conditions and the other points should hold good only in so far as not to develop an inferior type of furnace.

In addition to what has been said about the furnace, it is also true that the furnace manufacturer has been *so busy cheapening his product and placing orders* which he has been selling to Smith, Jones and Brown to install according to their own notions of engineering work, that he has not had time to investigate the engineering reputation of Smith, Jones and Brown to see if they would probably bring credit to his firm, nor has he had time to keep his own finger upon the pulse of the job to see if the plant is working well after it is installed. This apparent indifference of the manufacturer to the final results is probably the greatest source of trouble, and is that which gives color to the public mind and decides the buyer against furnace heat, because, as he has some right to argue, "Furnace plants are usually installed so as to make them inferior and defective, consequently the system is in itself defective. It is fast becoming a fact that the correct furnace job is the exception rather than the rule, and some remedy should be applied very soon. The fault is not in the

system. Furnace heating, if properly installed, is healthful, cheap and scientific. Neither can it be said that the fault all rests with the manufacturer. The purchaser is to a certain degree to blame, in that he is willing to let the contract to any one who cuts to the lowest price regardless of the quality of the man who takes the contract or of the apparatus which he represents. In certain localities it has become almost impossible for a man of reputation and integrity to obtain a contract, because he expects to live up to the "full intent and meaning" of the contract, and proposes to stay with his work until it is fully satisfactory, regardless of cost. Such a man usually presents an estimate that is sometimes considered high when compared to some others, but when the expense of changes and repairs is taken into account it would in many cases be the cheaper proposition.

It does seem unfortunate that there are men in the business who are in it *exclusively for the dollars*, and care little as to the results. If such men were held strictly to the satisfactory fulfillment of the contract, even though it were to the substitution of an entirely new system, there would be less careless and haphazard bidding, and part of the troubles at least would be remedied.

Relation of Heating Contractor to Architect

Another phase of the heating business which is a frequent source of annoyance and error is the relation of the heating engineer or the contractor installing such work to the architect. The house plans are usually made without the consideration of heating; the heating plans are then supposed to be made to fit the house plans. Now what the average architect does not know about the heating business would fill many books, but his own private opinion of his own worth in such matters is highly satisfactory, and consequently there is set up a different viewpoint between the designer of the building and the designer of the heating apparatus, much to the discomfort of the latter and to the detriment of his work in many cases. To be just to both, the system of heat should be selected first and then allowances should be made in the building plans for its installation. This is no hardship to the architect, since many slight changes, any one of which would possibly be in favor of the heating engineer, may be made in his plans without causing any trouble. Some of these points may be mentioned as follows: The size and location of the chimney; the running of the cellar partition walls to accommodate the location of the furnace and the coal bin; the height of the basement ceiling to allow sufficient inclination of the leader pipes; the construction of the partition walls between the rooms to allow for riser pipes of sufficient size to heat large upstairs rooms; the planning of the walls to avoid horizontal runs of heat ducts in the second floor to reach a room otherwise inaccessible; and other points.

All heating engineers know that the range of loca-

tion of a furnace relative to the house plan is very limited, and that in many cases it is an absolute necessity, after the house plan is completed, to set the furnace out of this desired location, thus compromising the efficiency of the system; also, that the basement ceiling in many cases is so low that the leaders require to be run nearly horizontal, thus reducing the draft in them; also, that a 6 inch studded wall in many cases could easily have been substituted for the 4 inch, with little additional cost, and have improved the system immensely; also, that certain walls absolutely prohibit the running of stacks to the desired spot in the room, and that with a slight change, this could have been arranged without in any way injuring the architect's plans. Such in brief are some of the troubles that the conscientious heating engineer or contractor faces when he proposes to do his work after the building plans have received the O. K. of the architect.

The Owner Interferes

Finally, however, the purchaser himself occasionally offers objections to the proper design of the system because of the desire to economize, although false economy it may prove to be in the end. Occasionally one hears the advice, "Don't heat the chamber rooms on the second floor very warm, because I like a cold sleeping room"—advice which, if heeded, would be good nine times in ten, but the tenth time when it is needed, it is needed badly, and the system and the man who installed it are both censured. How much better to have made the job right at first and permit the owner to regulate the damper to suit his needs, even to closing it entirely. The only word that could be spoken against this way of doing things is because of the very small increase in first cost; on the other hand, the favorable comment would be: "A system that is correct and one that *will heat* if you want it to." Good advice to all men installing residence heating systems is, "Heat every room as though it were to be used as a living room, and let the owner regulate to suit his needs."

Residence Heating by Hot Water and Steam

Not so much can be said about the failures in *hot water and steam systems*, because, as a rule, they are planned with greater care and by men better qualified to do the work. However, of all the difficulties experienced in both systems, by far the greater part can be charged to the hot water work. This is to be expected, when one remembers how very small is the motive force causing circulation in the water and how easily this may be counteracted by small pipes, many short turns or improper laying. Short cut rules for proportioning radiation are, also, in too frequent use even by those well grounded in the subject, and from whom could be demanded a more rational course. Residence heating by hot water and steam is fairly well standardized, and if designed from fundamental

laws and principles, and installed with care and good judgment, should in every case give good results. Some of the points wherein these systems give trouble are as follows: Chimneys too small; heater or boiler too small; heater or boiler too far from chimney; heater or boiler set too high, thus giving too little pitch to the main piping; mains too small, thus killing the flow of the water and steam, also bringing the water line of the boiler too near the level of the lowest radiation; radiation too small and improperly placed, and other minor points.

The architect is responsible for the location and capacity of the chimney, and, in a degree, to the location of the heater or boiler, for, as he plans the basement, the heating apparatus must be located to suit. Many chimneys are poorly located and are of improper size, and when the heater or boiler does not fire well the responsibility of the architect in the matter is seldom thought of, and the censure is placed upon the shoulders of the man who installed the heating apparatus. This feature of the work is where the heating engineer can do some missionary work in the line of architectural design. The other points mentioned are directly chargeable to the man who designs the heating system, and there is little excuse for his mistakes. All should know that the surface of mains and branches should be counted as radiation surface, and that the efficiency of the heater or boiler is somewhat reduced after having been in service for a time. Because of this latter point, a selection would be made having a capacity about 25 per cent greater than the total radiation found. When such a generator is properly set, all pipes in the system will have a satisfactory fall, the minimum height of circuit will be sufficient to cause a good circulation, and the pipes will be so proportioned and attached as to avoid short circuiting or water hammer. Too small mains on a steam system have a tendency to force the water on the return end back into the radiators and cause "flooding." All of the above points, and still others that might be named, will stand as a credit or discredit to the designer.

The Heating Engineer and the Contractor

In installations calling for a large expenditure of money, the heating engineer is usually called in to draw up the plans and specifications, and the contract for purchasing and installing the same is usually given to a separate party. This has the advantage of obtaining the complete layout of the plant with the apparatus specified by a party who is in a position to give an unbiased opinion, and also the advantage of obtaining a low estimate on installation because of the competitive bids. This system seems to be a very satisfactory one, all things considered, and probably gives the best results to the purchaser. It is not, however, entirely free from abuses. It is assumed that the party retained to do the engineering work will do his work conscientiously and scientifically, and that

when done each part will correlate to the other parts and all will work in harmony and without loss of efficiency. This means that the designer himself should understand his subject and should be able at any time to give facts and figures on every part of the work. He should also have his plans and specifications complete in all parts and stated in plain and definite language, so that the contractor will understand every part and not be compelled to assume conditions which in the end may be erroneous.

Uncertainty of Plans and Specifications

No uncertainty should enter into any part of the contractor's work, either as to quality and make of materials, or as to the way in which such materials are to be installed. Of course, there are many features of the work which may be left open to the discretion of the contractor, and these should not be arbitrarily stated. Such parts as the smaller details of the piping system, for example, where the cutting of the various parts may not in the least affect the efficiency of the plant, and where purposely omitting the same in the specifications and plans will give some latitude and satisfaction to the contractor in his work. These and other minor points are best not specified. The great trouble, however, with plans and specifications is not as to their exactness even to every little unnecessary detail, but as to the *lack of exactness concerning important points*. When the contractor may reasonably make more than one interpretation of any certain part, it is naturally to his interest to take such view of the case as will carry out the letter of the contract at the least possible expense. This may not be to the best interest of the purchaser, but such procedure should not be wholly charged to the contractor.

Know What You Are Doing

The final word of caution that this paper wishes to extend probably does not apply to any member of this organization, but it does apply in many cases to men in like occupations with yourself. The keynote is struck in the preceding paragraph and may be paraphrased in the following: "The engineer attacking any important problem should first become thoroughly familiar with the principles involved in its solution, and should afterwards check his results wherever possible." This point was emphasized to the writer in a test recently run upon a heating and ventilating plant in a certain building used for auditorium purposes. The trouble in this plant seemed to be not the one usually found—*i. e.*, cutting the parts to a minimum size and capacity—but rather the reverse; this will be seen by only one item out of a number which might be used for the benefit of illustration.

The auditorium, which was exposed on two sides, contained 225,692 cubic feet of volume, and was designed to accommodate 1,350 persons, thus requiring, we may say, a total of 2,430,000 cubic feet of fresh air per hour. Allowing the outside temperature to

be zero and the temperature of the auditorium air to be 65 degrees F., the total heat loss, including that thrown away with the air, was found by calculation to be 3,072,875 B. t. u. per hour, which gave by calculation 2,375 square feet or 7,125 lineal feet of one inch coil surface in the indirect heater. When the coil surface was measured after the test, it was found to contain 14,612 lineal feet, or a little more than twice the calculated amount! One reason for the test was the fact that a large part of the coil surface had been shut off soon after installation and never used afterward; and it was supposed the system was not well proportioned. Other parts of the plant also seemed to show the same lack of rational design.

What has just been stated concerning this one plant is true of too many plants about the country. If the business we represent is to rank high among other lines of engineering work, it is the duty of every man to discourage such methods, and insist upon a higher standard.



Second Annual Cement Show

The result of the recent letter ballot upon the question of the most suitable time for holding the Second Annual Cement Show in Chicago was as follows:

- 21.2 per cent favored December.
- 13.6 per cent favored January.
- 44 per cent favored February.
- 21.2 per cent favored March.

Practically all the exhibitors at the First Annual Cement Show sent in votes and a large number of others interested in the exhibition submitted their ballots. In accordance with the expressed wishes of the largest number, the management of the show has chosen the date in February, having leased the Coliseum for February 18-24.

The date chosen, it is believed, will prove very satisfactory coming as it does just prior to the opening of the cement season. Although application blanks and diagrams of the floor space have not yet been prepared, applications for reservations of space from prospective exhibitors are being sent in in large numbers.

The show last year was the first effort of the Cement Products Exhibition Co. at holding a show and it came at a period when the business outlook was so positively disheartening that many concerns were extremely loath to give the enterprise their support. But in spite of this the exhibition was far more satisfactory both to the exhibitors and spectators than any previously held. The show was conducted along business lines and the manner in which the arrangements were carried out met with the uniform approval of all concerned. The show was widely advertised and no effort or expense was spared by those behind the undertaking.

For the coming show unusually elaborate and comprehensive preparations are being made to interest not only those directly connected with the cement trade, but the general public as well. The future of the in-

dustry depends to a very large extent upon public opinion; and not until people generally can be educated to favor and to use concrete, will the cement industry occupy the place which it should properly hold.

The underlying idea of the Chicago show is to teach those who know something about cement construction more, and to teach those who know nothing about cement something. A cement show should not be conducted entirely for the purpose of bringing direct business to the exhibitors but it should be an industrial demonstration that will create universal interest in cement and its innumerable uses.



Largest Contract for Cement

The Atlas Portland Cement Company has been awarded the contract to furnish 4,500,000 barrels of cement to the Isthmian Canal Commission, at a cost of about \$5,500,000, the largest single contract ever given out in the Portland cement business in its entire history. The cement is to be used on the Panama canal, for which this company has already furnished upward of 100,000 barrels in the course of its construction to date.

The Atlas Company was the lowest bidder throughout, American and foreign mills alike being underbid, and the award of the contract came as no surprise.

The award of this contract marks a new era for the Portland cement industry. Had this order been given ten years ago, no mill or combination of mills could have filled the order. The industry has grown during the last few years at such a remarkable rate that the total amount required for this work is only a fraction of the yearly output of the successful bidder.

The contract provides that delivery shall begin in December, the shipments at a minimum rate of 2,000 barrels a day and a maximum of 10,000 barrels.



Gosh Dern

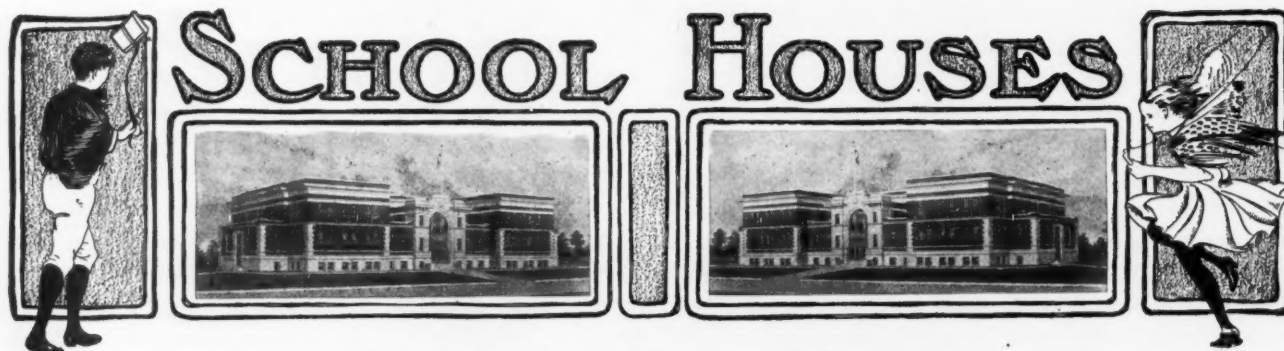
Out in Missouri Johnny Gosh and Jenny Dern were married a few days ago. The local editor, in his account of the wedding, could not resist the temptation to head it "Gosh-Dern!" but he has been hiding out in the desert and living on cactus and sand ever since in preference to facing the blustering bride and the irate husband.



Out of Place

Mrs. McSwat—Billinger, how did you like the decorations at the church this morning?"

Mr. McSwat—All the decoration I could see, Lobella, were worn by the young woman in front of me. I liked the grand sweep of the brim, the floral display and the general arrangement of the ribbons, but I thought the dead bird looked out of place."



An Eight-Room School

PERSPECTIVE AND FLOOR PLANS OF AN ATTRACTIVE, NICELY ARRANGED SCHOOL BUILDING—
GOOD FEATURES POINTED OUT

THE eight-room school building here presented was designed by G. W. Ashby, architect, for erection in a southern city. It embodies a number of desirable features which make for economy of construction and convenience in use.

In outward appearance it is plain, without fussy fancy work; yet the proportions are such that the

making a very safe arrangement in case of panic or fire. The floor plans are given on the next page.

The One-Room "Folding" Flat

There is a novelty in building construction, introduced into some of our western cities, that is arousing a good deal of interest and that seems to possess



effect is pleasing. The material is red brick with gray stone trimmings. Above there is a wide bracketed cornice and a cupola bell tower.

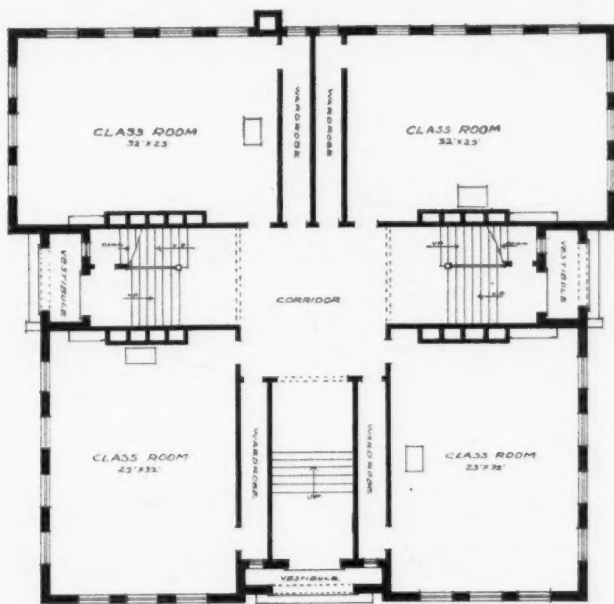
The class rooms are all 23 by 32 feet, each with ample wardrobe. All the rooms open to the large square hall at the center, from which three flights of steps descend to exits on three sides of the building,

much merit. This is the so-called "one-room flat." By means of specially built furniture it makes its one room serve for the purposes that usually take several. The apartment houses containing them shelter as many as 28 families. Some of them are called "residence hotels," and offer the tenants the choice of taking their meals in the public dining room or

using the domestic facilities attached to their own room.

Of course, the flat has in reality more than one room. There is an entrance hall, a bathroom, and a narrow apartment adjoining the main room which serves for the operation of the furniture, which swings on a pivot. The plan of these flats shows one large room, a kitchenette, a bathroom, and a curious room about three feet deep running parallel with the main living room. One end of this is closet room, while the other provides the space for the furniture to swing about in.

When the one-room flat is serving as a drawing



An Eight-Room School—First Floor Plan

room there is a small center table visible, a combination desk and bookcase, and a sideboard which stands in its place, whether the room is to be used as a sitting or dining room. It disappears only when the time for slumber has arrived. It is then that the sideboard turns around, and on the other side of the board partition back of it there swings into view a brass bed. This is folded up against the board, but it is so arranged that the bedclothes, attached to hooks in the head of the bed, are allowed to swing free and are aired all day.

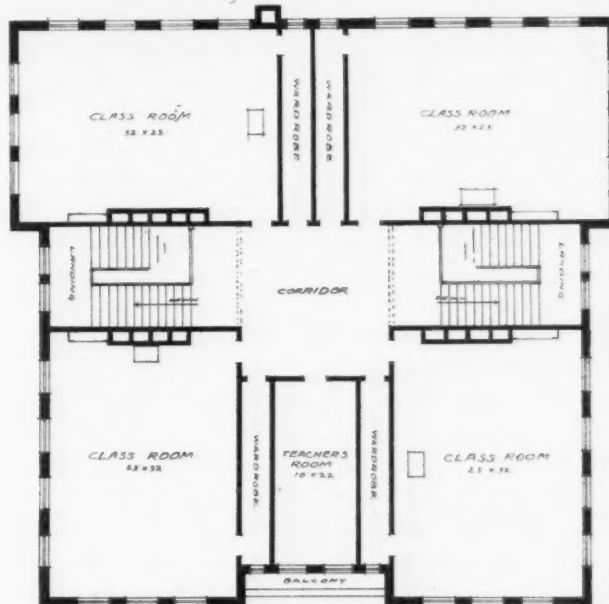
The library table, merely by swinging its edge around, doubles its size and is capable of seating four persons. When bedtime is at hand the bookcase, which stands next the sideboard, also does its turn, and, in its place, there appears a dressing table. Of course, the same chairs must serve, and they must be selected with appropriateness for the varied uses of the room.

The great merit claimed for these one-room flats is the saving of space, the freedom from the greater cares of housekeeping and the possibility of housing so many families in one building. Of course, the patented furniture made for them is the indispensable element of the scheme, and without it such dwelling

places would not be possible. So it is naturally the company that manufactures the furniture which is putting up the houses, selling stock in them and otherwise promoting them as they would any other building project. In not every case is the house supplied with a hotel dining room. In some there are only the small kitchens.

Fashions in Brick Changing

Observers of the characteristics of American architecture, and those familiar with the building industry, are discovering that fashion plays a considerable part in the use of face brick for exterior construction,



An Eight-Room School—Second Floor Plan

and that the fashion changes from year to year, with the production of new colorings and shape. A few years ago the finest fronts were constructed of red pressed brick, carefully gauged to size, and shaded to an even color, laid with as narrow a mortar joint as possible, usually of a shade matching the brick, the idea being to produce the appearance of a painted and ruled wall.

This conventional style has been gradually changed to give place to other colorings, and, recently, to a variance in size and shape of the brick. Simultaneously, rapid developments have been made in the thickness, color and texture of the mortar joint and in the style of bonding the face brick to the supporting wall, so that the construction of a brick facade today is a highly artistic piece of work, capable of the best results only in the hands of a skilled architect. A brick wall, to be attractive, should have "life" and "texture," and this can be best obtained by the use of brick varying considerably in color, and laid with a wide mortar joint, preferably with header brick forming a true bond into the main wall.

It is the patient plodder who is always the brilliant young fellow's landlord.



CONCRETE CONSTRUCTION



Expansion of Concrete

A RECORD OF SOME INTERESTING EXPERIMENTS SHOWING THAT CONCRETE, PLAIN OR REINFORCED, IS GREATLY AFFECTED BY MOISTURE—ALLOWANCE RULES FOR WORK

By Fred W. Hagloch

THERE are two distinct conditions or circumstances that cause concrete to expand, rise of temperature above 80 degrees, or a drop of temperature below 28 degrees, and moisture.

That concrete expands .0004 of its own length for every degree of temperature above 80 degrees has been known for years; it is also well known that a similar expansion occurs when the mercury falls below 28 degrees; but that moisture causes a still greater expansion, and that dryness causes contraction, few are willing to concede, though all admit it may have a very slight effect.

I have carried out a series of tests which I believe answer this question conclusively; I shall first give a few known occurrences that prove the theory if not the correctness of my tests.

A sidewalk made of concrete blocks 6 feet long and 6 inches thick, in a Pittsburg park, in 1896, remained in perfect condition until May, 1908, when it bulged or heaved at several places. This stretch of walk, 85 feet long, has withstood temperature changes

Another example is of two walks, 4 feet wide and 164 feet long, made of concrete slabs 4 feet square and 3 inches thick. These walks were laid on 4 inches of cinder footing on clay soil; the concrete was

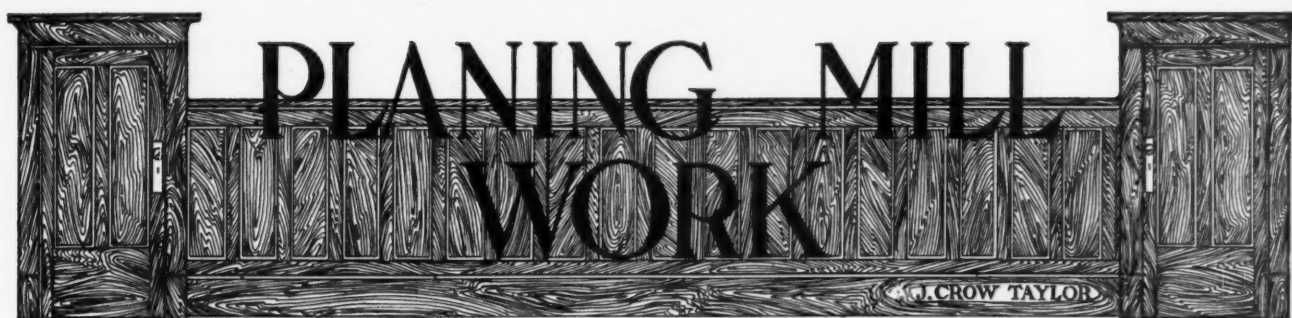


from 8 degrees below zero to 93 degrees above, or 101 degrees variation, without the least injury. Nevertheless, it expanded and cracked last May, when the temperature did not vary more than 30 degrees in 24 hours, and when freezing was entirely out of the question. Upon investigation, it was found that the excessive rains had caused the drains under the walk to become clogged, hence expansion by moisture was the sole cause of the trouble.

not kept moist and received no rains for three weeks after the work was finished in August, 1907. The expansion joints, made of No. 16 gauge sheet steel, were about one-sixteenth of an inch thick, which was found sufficient to protect same during the low winter temperatures, but the rainy season last May caused the upheavals shown in the illustrations. The walk on the higher side of street has raised the ridge four and one-fourth inches above the walk grade; while in the walk most subject to moisture, the ridge is seven and seven-eighths inches above the grade. The change of temperature during this period was slight.

The above are examples showing that plain concrete was uninjured by freezing, but was greatly affected by moisture.

After a number of such observations and tests, I have concluded that expansion by moisture is more important than that by extremes of temperature. My former rule of allowing one inch in fifty feet for reinforced concrete, while proving in many instances sufficient, will be changed to one and three-quarters inches per fifty feet. In plain concrete (not reinforced) I add a half more to the above allowance. The more dense concrete is made, the less will it expand by moisture, but the greater it is affected by extremes and changes of temperature.



The Woodworker's Dry Kiln

THE USE AND NEED OF ARTIFICIAL DRYING IN CONNECTION WITH WOODWORKING SHOPS—HOW EXHAUST HEAT MAY BE UTILIZED

AN IMPORTANT factor of not only every planing mill, but practically every wood working institution is something separate and apart from the mill so far as mechanical equipment is concerned; it is the dry kiln. While it does not come into consideration under the head of the mechanics proper, of woodworking machinery, yet the work of the machines and the general results depends considerably on the efficiency of the kilns. So every good woodworking institution should have a good dry kiln equipment. It doesn't matter, either, if lumber is bought that is presumably dry, if a high grade of cabinet work is being done, it is essential to re-dry the stock. The question of how to equip to do it is one that is probably puzzling many a man in the business. One reader at least has asked specifically for information on this subject in the following letter:

To the Editor:

Pittsburg, Pa.

"Will you kindly advise me through your paper with an article on 'Dry Kilns' which is the best and most economical way to construct one, what material is best suited, etc. We intend to use exhaust heat from our 50 horsepower gas engine. Do you think that is practical? VINCENT F. EIBEN."

When the question of erecting a dry kiln comes up there are more different things offered and more things to be taken into consideration than any man has any idea of until he tackles the subject once and goes into it thoroughly. Also, in the present instance, there is a new element brought up in the question of whether or not the heat from a gas engine, exhaust, may be utilized in this work.

To dispose of this last point first, because of its peculiarity, it is in order to say that almost any heat can be utilized in drying lumber; in this case it is more a question of whether or not there is sufficient heat than anything else. The writer does not recall ever having seen the exhaust of a gas engine used for this purpose; consequently, he is a little in the dark as to suggestions of ways and means to utilize it to the best advantage. That is, whether to water cool the exhaust and thus produce hot water and use hot water for the kiln or to utilize the heat by means of an exhaust fan.

What Material to Use

In the building of a dry kiln, leaving aside for the

present entirely the question of dimensions and of drying methods, and considering more particularly the materials entering into construction and the manner of their use, there are three classes of material used for construction. They are wood, brick, and cement or concrete. The majority of kilns among the mills are of wooden construction and the method of construction varies more or less. Generally, however, the kilns are framed and have at least two walls, one inside and one outside the framing. Generally, too, what is known as standard inch flooring is used in this work and sometimes on the outside there is also put a covering of tar or composition roofing paper as a sort of extra protection against air getting in or out. In some styles of kilns these walls are used with dead air space between, in others the spaces between the framing are used to form vents or draft flues; and in some, where no vent is wanted through the wall, the space between the walls is filled with sawdust. It is generally conceded, however, that, as a non-conductor of heat, the air space is as good as an extra filling of sawdust, and it is much cleaner. Some vary this method a little by using flooring to ceil the inside with and put a drop side on the outside, either tongue and grooved or shiplap together. Some put a rough sheeting on the outside and then a tar building paper covering all with bevel siding or something of that kind. These are details that change considerably to suit the material and the ideas of the men doing the work.

Fire Proof Kilns

Where it is desired to have permanent kilns and a better degree of safety in case of fire the dry kilns are constructed either of brick or of concrete blocks. Brick construction is so well known as to need but little elaboration as it is a mere building of brick walls; if flues or vents are wanted up through the walls they can be built in like flues, up through the walls in ordinary house construction.

Since the rise in popularity of concrete blocks there has been quite a lot of experimenting with them in dry kiln work, and some who have used them claim to be well pleased with the results. In this work, in the building of the concrete block walls, it is pretty

much the same as house building, except that sometimes the blocks are so laid as to make flues or vents up through the wall out of the hollow spaces in the blocks.

Whether this is done or not depends on whether such a system of ventilation is used, or whether there are to be flues or some other form of draft.

As to which of these methods it is best to follow and the material that is most economical, depends considerably on the location and the availability of the different materials entering into the dry kiln construction. There is no doubt but that for a permanent kiln, it is better either to use concrete or brick if it can be had at reasonable cost, even though the first cost is more than for lumber. Also, if one pays insurance, there is a saving on insurance; because either brick or concrete walls, although they won't save the material in the dry kiln from burning in case a fire starts *inside* the kiln, still they will prevent the fire from spreading or the kiln taking fire readily from some outside fire.

Some Peculiar Kilns

This question of furnishing heat from the gas engine, while it is different, calls to mind an independently heated kiln of peculiar construction. This kiln is for drying lumber for a parquet flooring plant working about 5,000 feet a day. The plant is driven by electricity; consequently, there is no waste heat about the plant to be utilized. So the heat for the kiln had to be produced independently. To this end a small boiler was purchased, about 20 horsepower, and was set, not on top of the ground, but in a brick structure that was bedded down into the ground like a basement, so that the top of the boiler is below the surface of the ground. The boiler room is made just large enough to hold the boiler and a reasonable amount of fuel. The dry kiln was fitted with return coil steam pipes pretty much as the regulation kiln, and the return or condensation from the kiln was piped back to the boiler. The object in this was to economize both in water and in heat; for, by this means, the boiler only required a little additional water now and then to make up for the loss through leaks, the water from the condensed steam being turned right into the boiler all the time. Only a few pounds of steam were necessary, just enough to get the heat. The whole thing reminds one considerably of the steam heating plant for a dwelling. In fact, it is more on that order than anything else. This system ought to suggest a good idea for those who are using electricity or gasoline engines for their motive power, as it makes a nice self-contained dry kiln system that is simple; and its cost, of course, depends on the magnitude of the requirements. If they are small, the heating equipment need not be more expensive than that for an ordinary house.

One might, on the same idea, varied somewhat, use a hot air furnace in which could be burned waste

accumulation and heat the dry kiln with hot blast. In fact, this idea suggests itself as being one of the best for shops of small dry kiln requirements. It is capable of lots of changes and expansion in one way and another, and might even be extended to embrace the use of heat from the exhaust of a gas engine.

Natural Gas for Drying

This gas engine recalls one of the most peculiar dry kilns the writer ever saw, a kiln for drying slack cooperage stock in the gas belt of Indiana. This kiln was operated by gas, that is, by burning gas underneath much on the same plan as in the old smoker kilns that burned a fire underneath to generate heat. Of course, there was quite a lot of basement room and the gas jets were probably six feet below the bottom of the material that was drying, but they burned freely and brightly and looked mighty dangerous. The gentleman who was operating them, however, contended that they were not half so dangerous as they looked, and not nearly so likely to cause fire as the old smoker kiln in which the blaze was kept down as low as practical. His explanation of this was that the gas burners didn't throw out any sparks to go up through the stock, and that there was no blaze except right at the burner, with nothing but heat going up to dry the material. He was evidently right about it, too, for he had used it for a number of years and had not had a fire. Still, it was a dangerous looking proposition and it would probably be condemned by the board of underwriters of any city as too hazardous to be in operation.

Another peculiar type of dry kiln or drying room once examined was probably the simplest type going. It was a drying room for drying hickory handles in connection with a handle factory. It consisted merely of a box wall, strips nailed over the cracks, small windows which could be opened to get air to alter the temperature when desired, and a floor laid with common boards with cracks between the boards about an inch or a little more. Underneath the floor were runs of steam pipe here and there to furnish heat. The stuff was piled right in the room on the floor and either live or exhaust steam used, depending on the circumstances. The room was heated to temperatures ranging from 80 to 110 degrees. In this case high heat was never used, because it was not desired to dry out the stock too rapidly; and, while it took longer, the drying was probably better done than if more heat had been used.

Temperature to Use

This point of temperature is one that is getting quite a lot of attention these days, and there seems to be a tendency to use a lower temperature than formerly, keeping stuff in the kiln longer. The high temperature kilns are both dangerous and calculated to cause checking because of the excessive heat. The idea, today, seems to be to let the temperature down to

150 or 110 degrees instead of going above 200 as in some of the older kilns. It is a matter that depends considerably on what is being dried, and the condition it is in. Generally, the stock the average woodworker has to dry is some that was either partially air dried or possibly had been through a kiln already, so the main purpose of the dry kiln is to do what is called re-drying, to insure getting the stock thoroughly dry; and it is more a matter of careful piling and proper handling of vents, given time enough, than it is a matter of seeing how rapidly it can be dried.



Curious House

In Lehigh county, Penn., lives a farmer by the name of Tilghman Fogel, and he has erected one of the most novel houses ever conceived. It's the only one of its kind in the world, its walls being constructed of cement in which are imbedded thousands of souvenirs collected in all parts of the globe. These souvenirs consists of all kinds of stones, pebbles, wood, shells, medicine bottles, glassware of every description, plain colored and fancy; chinaware, plain and fancy; some whole, some otherwise. For instance, he'd take a glass pitcher and stick it into the soft cement so that only the handle protruded. Then he would take another pitcher, whether of glass or china, and stick it in sidewise. He'd do the same with cups and saucers. He would take a pitcher or cup and insert it sidewise, so that half would be in the cement and the other half would project. A handful of bits of colored glass would be stuck into the cement in varying designs, the whole making a phantasmagoria almost delirious in its effect.

On the north and south sides of the house there are huge squares of cement filled in with all kinds of rock, some of them three times the size of a man's head. Some of them are the ordinary cobbles you find in a field, others are of iron ore, flint, limestone and a peculiar specimen of rock which he brought all the way from Kansas. Other specimens came from other western States. He says those souvenirs in the cement blocks represent practically every State in the Union. The borders around the windows at the kitchen are composed of alternate layers of brick and soda water bottles with the bottom outward. First there is a brick, then a bottle, then another brick and so on. Among them are some of the old-fashioned glass knobs from bureau drawers. The pillars of the porch are of bluestone, hand-carved, and each pillar represents a different kind of wood. The interior of the house is neat and tasteful and without any oddity of any kind.



Substitute for Wood

Harold L. Holister of Hopkins, Minn., one time publisher of The Morristown Press, has invented and patented a substitute for wood which promises to work wonders in the erection of buildings. The material is

composed of straw and a by-product of coal oil. Seventy-five per cent straw is used and this is cemented together with the coal oil material with other chemicals making a substance that it is claimed will take the place of wood in any line of building. It is superior to wood in that it is fire proof, water-proof and will not decay. Saws, planes, augers, etc., will work it as readily as wood and there is no grain to split. Nails can be driven close to the edge and will hold firmer than wood as the friction of driving the nail partially warms up the tarry substance which again hardens holding the nail firmly.

The straw is chopped and mixed with the oil or cement and all is put into a pot where it is melted; then it is turned into a mold and heavy pressure applied which forms into the desired thickness, shapes, lengths, etc. This substitute weighs about the same as oak and is declared to be as strong as a piece of ordinary lumber of the same dimensions. Straw, slough grass, or hay can be used in the manufacture and the finished product is expected to cost about half the price of lumber.

Mr. Hollister is receiving substantial support from many prominent business men of the state and all who have seen the material or its manufacture and investigated its usefulness anticipate great things. Special machinery for its manufacture is now being built and it will be but a short time before the manufacture for general use will commence.



Concrete a Sanitary Building Material

Among the many claims made for the superiority of concrete as a building material is that of its sanitary qualities. The Board of Health of Detroit, Mich., at a recent meeting was given evidence on this point which would seem to be conclusive. In that city it was found that the wooden floors of an old meat market had become saturated with filth, and that rats and other vermin held high carnival among the rotten boards and beams. The Board of Health ordered the old floors removed and concrete substituted for the wood, the executive officer stating that the vermin would be forced to look for other boarding houses after the mandate had been executed.

The wood in the old stalls of the Chicago stockyards, which had become soaked with animal matter, has been largely replaced by concrete since the recent sensational developments made in the packing industry. Concrete has the right to be considered as an agent of health, as well as the cheapest, most easily handled and strongest building material developed in modern times.



When He Stammered

Employer (engaging clerk)—But do you always stammer like that?

Applicant—N-n-n-no, sir; only w-w-when I t-t-talk.



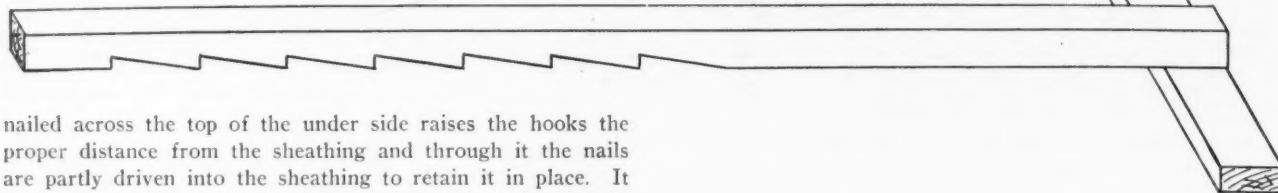
A Gauge for Spacing Shingles

To the Editor:

New Era, Ore.

The accompanying illustration shows a device which I use to hold and space the straight edge in laying shingles.

It is made from a 2 by 2 inch piece about 5½ feet long. For laying shingles 5 inches to the weather, the hooks, or notches should be made 5 inches apart, etc. The small board



nailed across the top of the under side raises the hooks the proper distance from the sheathing and through it the nails are partly driven into the sheathing to retain it in place. It requires two of these gauges, one at each end of the straight edge, which should be kept level. In sliding the straight edge up, a notch regulates the spacing and keeps the courses straight with the roof.

ELMER VETETO.

Brick Veneer

To the Editor:

Warriorsmark, Pa.

The enclosed is a picture of a roomy, well designed house of brick veneer construction which I am putting up in this

place for A. W. Hyskell, Esq. Some features of it may be interesting to the readers of the AMERICAN CARPENTER AND BUILDER.

C. G. BURKETT.



House of Brick Veneer Construction Being Erected By C. G. Burkett at Warriorsmark, Pa.

Suggestions Requested

To the Editor:

Aurora, N. Y.

I am a merchant, keep a general store; but am also something of a mason and builder and am very much interested in your magazine. I am also anxious to have your new book "Cement Houses and How to Build Them."

Now I would like for you or some of the readers to give



me some ideas about remodeling my store. You will see from the picture that we have a new front, bottom and top; and I want to put a cement plaster finish between the windows and up to the galvanized cornice. I am sure that I can do the work if some of you can tell me the best way.

I would also like to know what I can put in the show windows which will be cheaper than tile and can be cleaned.

M. MALONEY, JR.

Satisfactory Squirrel Cage

To the Editor:

Centerville, S. D.

In answer to J. E. Donaho's question in regard to squirrel house, I would suggest that he build it 5 feet square, roofed same as a gable house, having one side of house $\frac{1}{2}$ inch mesh sand screen, also line the whole house with the screen, so the squirrels can climb all over the interior, as the wire gives them a hold so they will not slip. Procure a branching, small tree top and plant firmly near center of house. Also if possible get a natural squirrel tree—that is, a hollow log—about 12 in. through, cutting to length to reach from floor to ceiling and place in one of the back corners of the house. Have a branch of small tree project toward hollow tree, but leave space so they will have to jump, and you will be surprised at the hours they will race up one tree and down the other. Place squirrel wheel where convenient, and feed door the same. Could you not procure a hollow tree, you can get one with good rough bark and place a box at top.

H. I. HOLCOMB.

Puzzle Answered

To the Editor:

Milwaukee, Wis.

Mr. H. E. Graham of Condon, Ala., has given a problem in the July number of your valuable magazine for your readers, and wants to know how far from the top end a timber must be cut which is 30 feet long, 10 inches square at top and 12 inches square at bottom, so that the top piece will contain as many feet of lumber as the bottom piece.

The whole timber contains 302.4 feet of lumber and must be cut 16.36 feet from the top end to contain as many feet of lumber as the bottom piece, that is, 151.2 feet of lumber.

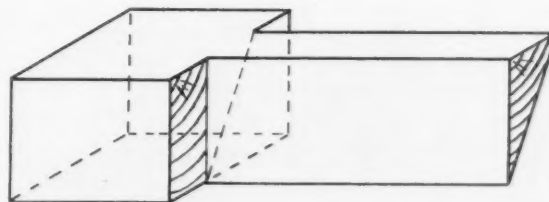
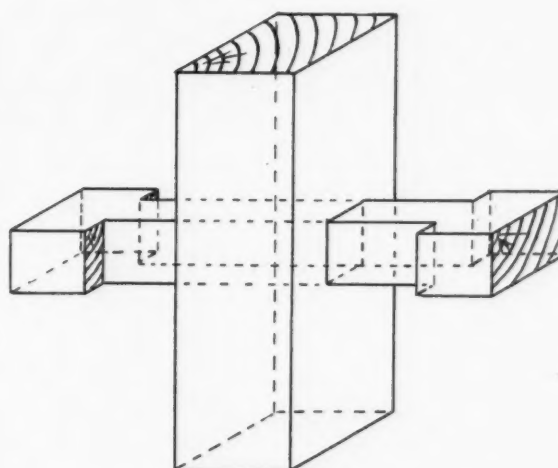
Your readers are still waiting for the solution of the won-

derful puzzle given by Mr. Pinus Strobis in the May number, consisting of a piece of mahogany with a mortise through the center and a hammer-headed key of white pine through it, as shown in sketch No. 4 on page 231. Each piece is absolutely solid and was never cut apart or glued up in the making. Mr. Strobis being perhaps the only one who knows how it is done, would do us a great favor to tell us the secret.

JACOB GEREND.

Answer: I can assure Mr. Gerend that I am by no means the sole repository of the secret of the joint shown in the May number of this magazine. It is very simple. Boil or steam the white pine key until it is quite soft; squeeze one end in a powerful iron vise until it is compressed sufficiently to pass through the mortise in the piece of mahogany. As the pine swells very rapidly one has to "step lively" to get it through

Puzzle Joint



before it is too large to pass the mortise. When the key is dry, a rub with sandpaper easily removes all traces of the steaming and compression, and leaves the most deceiving wood puzzle known to the writer.

Of course, the reason that this puzzle proved baffling to my fellow correspondents was that it was clearly stated that the key was absolutely solid. If that condition had been absent, many of the readers of this journal would have remembered a puzzle of similar outward appearance, in which the key is glued up as shown in the accompanying sketch.

PINUS STROBUS.

To Draw Spiral with Compass and Square

To the Editor:

Montreal, Can.

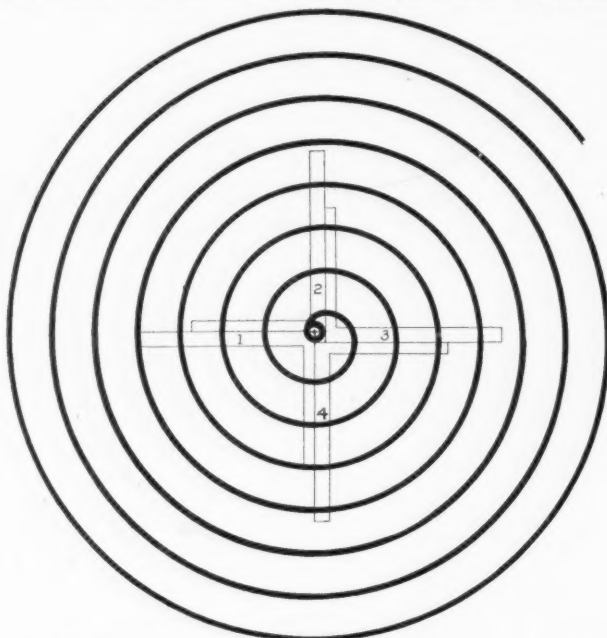
Will you please ask Mr. Woods to show how to draw a spiral with a compass and the steel square? I was told that he has a way of doing it and thought it would be interesting to many others, as well as myself.

JOHN ERIKSON.

Answer: To draw a spiral with the aid of a common compass is a very simple matter and any one that can at all handle the instrument, can do it after a moment's study, as

the spiral is composed of four parts of quarter circles and is therefore made from four centers.

In the illustration are shown four squares and the centers are at the heel of each square and it will be seen that the spiral lines pass at equal distances from the heels of the respective squares, thus proving that it is made up of true quarter circles. In the illustration, the spiral starts out from a true circle with its center at the heel of square No. 1 and the centers for the beginning of the spiral is at the heel of No. 2 and the changing point is at the blade of the respective square from the heel from which that part of the circle is turned. Then without changing the pencil point, set the needle point back to the heel of the next square and so on to the end. The distance between the spiral lines is governed



by the distance around the square formed by the steel square as shown at the center of the illustration. If it is desired to have the spiral lines two inches apart, the square would only be one-half inch each way, just as though the heels were shoved by each other that amount. A. W. WOODS.



Quick Estimating

To the Editor: Monroe, La.

I have been a charter subscriber to your journal since its first number was published. I have been hoping that some contractor would some time give some rule for a quick estimate on buildings—brick buildings, such as stores, school houses, churches, halls, etc. I would like to ask for such information through the columns of the AMERICAN CARPENTER AND BUILDER. A. J. BROOKS.



Top Cuts for Bridge Truss

To the Editor: Brooklyn, N. Y.

I have been a subscriber to your valuable paper since its first issue, would like to have room to answer Mr. A. D. Woodson's question in the June, 1908, number, how to get the top cuts of his truss. Take run of brace, plus one-half of gain of brace on blade, one-half of rise on tongue, tongue gives cut. J. L. BRETH.



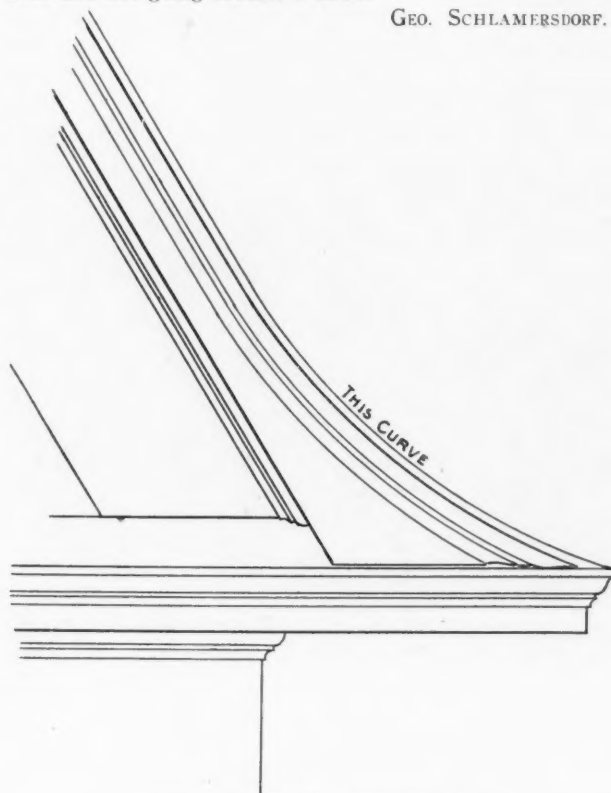
Curved Crown Molds

To the Editor: Vincennes, Ind.

I would like to ask a question through the columns of your journal. Enclosed you will find a sketch for a curved crown mold. Now it is this. Is there a rule for developing this

mold out of one inch stuff? Note that this is for a concave roof and not going around a circle.

GEO. SCHLAMERSDORF.



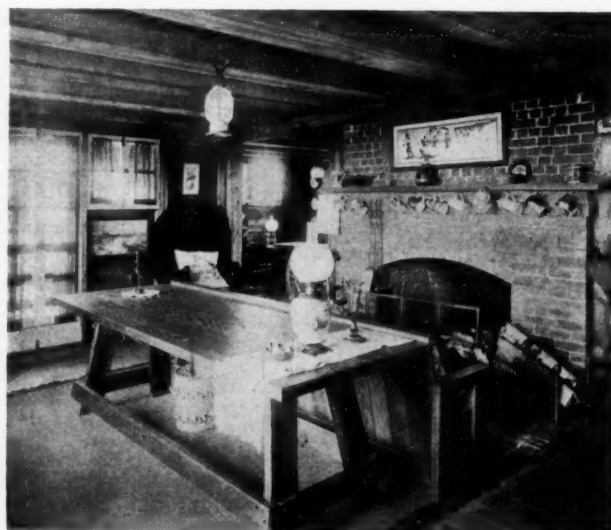
From a Home Workshop

To the Editor:

Westboro, Mass.

The photo inclosed may be of interest to some of the readers of the AMERICAN CARPENTER AND BUILDER, especially those interested in hand-made furniture, as it shows a piece of such work of rather peculiar design—a very large combination table and fireplace seat, which I was called upon to construct some time ago.

The intention was to make it very solid and comfortable, the chief piece of furniture in the large living room of a bungalow being built near here. The photo shows it in place



before the broad hearth, where it adds much to the homelike comfort of the room.

In construction it is of the simplest kind, being built of two-inch surfaced maple stock, fastened together with old-fashioned wrought iron spikes. The finish is the dull wax in natural grain. JOHN LYMAN.



Original American Carpenter and Builder

To the Editor:

Wahkon, Minn.

Perhaps the readers of this magazine will be interested in seeing present day examples of the work of what might be called the original American carpenters and builders,—the bark huts of the Chippewa Indians of Northern Minnesota. These are located on the shore of that beautiful inland sea, Mille Lacs Lake, near the new summer resort town of Wahkon, about midway between St. Paul and Duluth.

Most of their houses and huts are made of birch bark and

rush matting over a frame work of wattles and poles, not a single nail being used. You will see clearly from the pictures that not all the modern improvements have been incorporated in the design. Still there is no sign of "race suicide!"

The Indians here are now at work also on several birch bark canoes. Their kit of tools for this, as for their other building work, is made up of a knife and a large awl like a scratch awl.

Best wishes to the world's greatest building paper and to all the big family.

T. R. McCORMIC.



Typical Bark and Twig Huts—Homes of the Chippewa Indians, Near Mille Lacs Lake, Minn.



PRACTICAL TRADE APPLIANCES

Book Review

We are in receipt of a copy of the 17th annual 1908 edition of Hendricks' Commercial Register of the United States for Buyers and Sellers, published in New York City. By comparing the present with past editions we find it still continues to improve and increases with each new issue.

The 16th annual 1907 edition required 76 pages to index its contents while the present edition requires 82 pages. As each page contains 412 classifications, the six additional pages contain 2,472 additional trade classifications, making for the eighty-two pages a grand total of 33,684 headings each one of which represents the manufacturers, etc., of some machine, tool, apparatus, specialty or material.

The first edition was issued in 1891 and contained about five hundred pages, while the present numbers over 1300 pages and contains upward of 350,000 names and addresses classified under 33,684 trade headings.

The first edition required only eight pages to index its contents with 206 classifications on each page or a total of 1648, and it was devoted solely to the building industries of the country, while the present edition covers not only that, but also the engineering, mechanical, railroad, electrical, min-

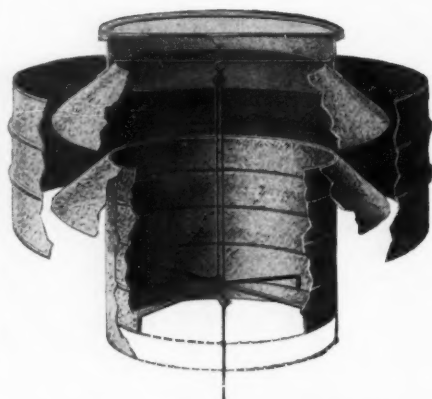
ing, iron, steel, export and kindred industries. The difference between it and the present edition will give you some idea of the growth of the publication and the appreciation with which it has been received. It is the only publication ever issued that is so classified that it can be used for either purchasing or mailing purposes.

The Hendricks' Company makes no charge for fully classifying any firms' business, consequently, they have the material for making the most complete buyers reference issued.

As an illustration of the system used, we might mention "machinists and founders;" all firms who have a machine shop or a foundry are classified under that heading for mailing purposes, then each firm is sub-classified under headings that cover every variety of its product. This makes the work very complete for both buying and selling.

Beaver Boards

The illustration on this page is made from a photograph of the dining room in the residence of the noted author, Anna Katherine Green at Buffalo, N. Y. It is of special interest to carpenters and builders because the walls and ceiling are made of Beaver boards—no lath or plaster being used; it gives some idea of the attractive interior finish thus ob-



Notice Sliding Sleeve Damper. Patented.

wherever they are installed. The Burt construction is unusually thorough from the selection of the raw material down through the finishing of the last rivet.

The features of Burt Ventilators are unusual. They have patented adjustable sliding sleeve damper. They are storm and dust proof whether open or closed. They can be opened to any degree by a simple pull of the adjusting cord and are made with glass tops, thus making a combination skylight and ventilator.

Send for our new 92-page catalog giving fine illustrations of mills, shops, factories, and residences where Burt Ventilators are in successful use.

The Burt Mfg. Company, 500 Main St., Akron, O.

Largest manufacturers of Oil Filters and Exhaust Heads in the world.
Geo. W. Reed & Co., Montreal, Sole Manufacturers of "Burt" Ventilators for Canada.

Good Evidence

The following letter is received from a "Burt" user who at three different times has come back for more "Burts" for use in his factory:

June 12, 1908, Knoxville, Tenn.

Gentlemen:—We have your letter of the 10th inst. with reference to the 8-30" Glass Top and 6-48" Metal Top Burt Ventilators sold us, and beg to advise that we are finding these ventilators satisfactory.

Yours truly,

THE WM. J. OLIVER MFG. CO.

Burt Ventilators

always prove their worth and their superiority



Notice Sliding Sleeve Damper. Patented.

FORD'S Galvanized RUBBER ROOFING

Our Crow Has Spurs Behind It

From first to last we know every ounce of the material entering into the manufacture of our roofing products. This roofing has behind it **Forty Years of Success** under our own individual process of manufacture. Like our Rooster it is "thoroughbred" throughout. Our special process of making this roofing involves extreme heat and great pressure and absolutely the purest asphalt, coating and highest grade wool-felt the world affords.

The result is an elastic, mineral quality that no extreme of weather or temperature can effect.

WARNING This roofing cannot be bought of "mail-order" or "catalogue houses" and the public are warned against cheap imitations sold under names closely resembling our brand.



Send for our Booklet on Roofing. All Our Products Satisfy

Our "Quality" Crow

"Quality", backed with positive guarantees, is the key note of everything we claim for Ford's Galvanized Rubber Roofing. There's no "ifs" or "ands" about our protecting contractors, owners and dealers who buy or sell this roofing. That word "Galvanized" means something. It distinguishes the special manufacturing process briefly referred to above. For your own and our protection **insist on having Ford's Galvanized Rubber Roofing** for all buildings.

The Guarantees We Give

The guarantees named below are positive and are Based on Actual Time Tests in all climates and under all conditions.

On 3-Ply

We give guarantee through dealers direct to consumer or contractor for **15 years** on Three Ply.

On 2-Ply

We give guarantee through dealers direct to consumer or contractor for **10 years** on Two Ply

On 1-Ply

We give guarantee through dealers direct to consumer or contractor for **5 years** on One Ply.

Send for Free Samples and Specify Ford's Galvanized Rubber Roofing

FORD MAN'FG CO. 161 W. Wash. St.
CHICAGO

tainable. Beaver boards are a new wall and ceiling material which are rapidly growing in popularity wherever they have been introduced. These boards are made of wood fibre, chemically treated and pressed into sheets about 3-16 inch thick, and varying in size from 24 by 24 inches to 48 by 78 inches. The edges are straight, and the corners square. These boards are firm and rigid; do not split, crack or chip; are nailed direct to studding, and can be frescoed or tinted any shade, producing a specially artistic effect when beading is used to make a panelled wall. It is claimed that these boards are



non-conductors of heat and cold, that their use make the house warmer in winter and cooler in summer. The manufacturer reports that they are being used particularly in the construction of the better class of buildings, such as brown stone fronts, etc. Among the advantages claimed is the fact that their use hastens construction, no waiting for plaster to dry; obviates the danger from falling plaster and the dirt incident to repairing same. Beaver boards are made in six kinds to meet various requirements. The variety includes an indurated, waterproof board to cover old and cracked plaster walls and such as are to be papered; also Beaver veneering which is a perfect reproduction of several kinds of rare woods for interior use, and Beaver siding for exterior use. Beaver boards are used extensively for bungalows, summer cottages and partitions in office buildings. We suggest that carpenters and builders might find it to their interest to induce property owners to have their attics and top floors lined with these boards as it would make the houses warmer and save fuel. carpenters could thus keep their force employed during the dull fall and winter months. These boards are manufactured by the Beaver Manufacturing Company, Buffalo, N. Y. We advise our readers to send for the free samples of all six kinds of Beaver boards and the descriptive literature, and judge for themselves as to the real merit of this much-talked-of product.

Luxfer Prism Daylighting

It seems paradoxical almost, that daylight, which is free to all in bounteous supply, is oftentimes so hard to secure. The problem, however, is familiar to everyone. Land, in progressive centers, is expensive; buildings of several stories are therefore built in close proximity, and the tenants are shut off by high abutting walls from the light of the sun.

There is plenty of daylight, but it is above or to one side of the point where the occupant of the store, the office or the factory can benefit from it.

This, briefly, is the work performed by the Luxfer system—to so bend or divert the rays of light coming from above or either side that they shine into darkened rooms, and flood them with Nature's own illuminant—daylight.

Luxfer system creates nothing, but simply utilizes the inexhaustible and constant supply of daylight. After installation, Luxfer costs nothing. It makes a light, cheerful place of a dark, gloomy one. It makes people healthier, happier and capable of more and better work. It saves its cost in artificial lighting bills alone.

The operation of Luxfer, like most scientific successes, is extremely simple. The rays of light, coming from all the bright outside world, are bent by means of prism angles, and so are projected to any desired point. This is not a matter of guess work, but experts in daylight illumination work out the problems and angles in each case.

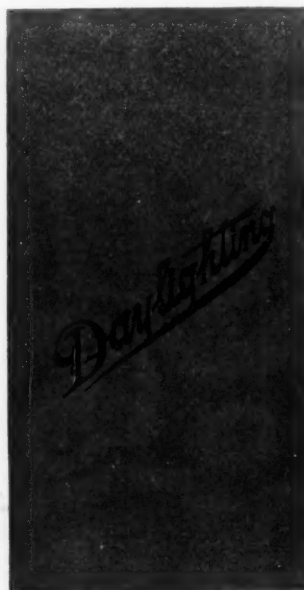
Luxfer prisms are produced to meet all possible needs and conditions of building. There are pressed tile prisms for transom work, prism canopies for narrow streets and courts, pressed prism skylights, floor prisms, plain sidewalk lights and Luxfer sidewalk prisms. We recommend, unreservedly, any and all of these to the contractors and builders of the AMERICAN CARPENTER AND BUILDER family.

There are three classes of people who cannot afford delay in installing Luxfer; merchants whose stores (large or small) are not flooded with daylight; manufacturers of all classes; owners or lessees of basements which are not utilized to their greatest advantage. To all these, Luxfer daylighting means an immediate-return, ready-money proposition.

No problem is too small or large to command the expert attention of this company. They are as much interested in equipping the 30 foot store as the million dollar business block, and execute a contract for either with the same promptness and fidelity, in any part of the U. S.

The home office or any local representative will tell you all about Luxfer as applied to your problem without cost or without obligating you in any way.

They have special detailed literature upon all forms of Luxfer we have mentioned herein. Tell them about your particular problem and they will supply you with full information. The illustration herewith shows the front cover of an interesting booklet, which is sent free to all who write either the main office, 1600 Heyworth building, Chicago, or to the following branch offices: 46 Federal street, Boston; 32 Builders' Exchange, Baltimore, Md.;



1022 Garfield building, Cleveland, O.; 21 Thoms building, Cin-

LUMBER AND BUILDING MATERIAL

Special Offer To Contractors And Builders

Buy From Us At **WRECKING PRICES** **CHICAGO HOUSE WRECKING CO.** An Opportunity To Save **25 TO 50 PER CENT**

IMPORTANT! Send Us Your Lumber and Building List for Our Estimate

Brand New Lumber for Sale

The Chicago House Wrecking Company is the largest concern on earth devoted to the sale of Building Material and General Supplies direct to the Carpenter and the Contractor. By dealing with us you are purchasing at first hands. This company was organized in 1893 for the purpose of dismantling the Columbian Exposition at Chicago. Since that time we have successfully purchased and dismantled every Exposition of any note. We have from this one source alone sold over One Hundred and Sixty-five Million feet of lumber. It was from this natural cause that we engaged in the lumber business. We found that it was impossible for us to successfully take care of the thousands of our customers and supply them with lumber from this one source. As a consequence we purchased outright various saw mills and also bought at forced sales millions of feet of high grade, brand new lumber. In addition we have for sale a complete stock of mill work, plumbing material, heating apparatus, structural iron, hardware and everything that enters into the construction of a building of any kind or for any purpose. Our fame is National. No other firm can make the sweeping statement that we do: That you can come into our establishment and buy everything needed both to build the building and completely equip it. We invite inspection of our stock.

Fifty Million Feet In Stock

At the present time, we have for quick sale over fifty million feet of brand new, first class, high grade lumber of every kind. We can furnish you lumber for building houses, churches, barns, stores and factories. And it is the best grade of lumber. Just as good lumber as is to be found anywhere on earth. We are making special prices to those who buy at once. Never in years has lumber been offered at such prices as we offer it. The best proof of this is to allow us to make a bid on your estimates. Just make a complete list of everything you need for any particular job you may have on hand and it will surprise you what we can do in the way of prices. Nothing like it was ever heard of. The best and most convincing proof of our prices is the fact that during the past sixty days while others have been bawling poor business, we have steadily increased and have sold vast quantities of lumber and building material. Much more in fact than we have ever sold in any corresponding period in the history of this business. You will save in dealing with us. Our broad and binding guarantee protects you absolutely. You will get from us just the material that you purchase. It stands to reason that our goods must be right. How else could our business have attained its wonderful commercial proportions? All we ask is an opportunity to convince you. Or, better yet, come on to Chicago, visit our yards, see our goods. We will show you it is all that we represent. Then and there we will make you a price so low that it is bound to secure your business. You can't overlook such a chance as we offer. It is the opportunity of a life time. You will never again be able to purchase lumber and building material at such low prices as we offer today. Write for particulars.

Satisfaction Guaranteed.

We guarantee absolute satisfaction. We mean every word of that. We want your business only on a square business-like basis. We will deal honestly and fairly with you. If you buy any material not fully up to our description, we will either refund the purchase price or exchange it for correct material. This company has a capital stock and surplus of over One Million Dollars. We refer you to any Bank or Banker anywhere. Write to any commercial agency or ask us for names of people who have bought their lumber from us recently and we will send you copies of hundreds of letters received by us daily. Our best advertisement is the vast number of satisfied customers. **Write Today For Our Low Lumber Prices** Ask us to send you our latest lumber price list. It will be sent you so clearly and plainly that you can tell at a glance just what our quotations are. The grades are clearly defined. No attempt to humbug you on quality. We want to furnish you just what you buy. We want you to be able to say you "bought your lumber and building material from us and get value for your investment." That's the way we built up this business. That's the way we intend to continue to build. We require your patronage and good will. Out-line your needs and we will make you a reply so convincing and clear that you can't help but give us the business.

Everything Used In Building Sold At A Big Reduction

BARGAINS IN DOORS

5000 4-panel Doors 1 3/8-in. thick, size 2 ft. 6 in. x 6 ft. 6 in. 95c each. Size 2 ft. 8 in. x 6 ft. 8 in. \$1.05 each. We carry a complete stock of brand new doors of all sizes and in every specification. Handsome high grade front and vestibule Doors, strictly "A" quality and the best of their respective kind. They are set with bevel plate glass, or, we can furnish them glazed with fancy lace design, double strength glass. They range in price from \$3.75 to \$20.00. High grade Front Doors, brand new, strictly "A" quality White Pine, glazed with sand blast glass size 2 ft. 6 in. x 6 ft. 6 in. \$3.15. Other sizes at proportionate prices. California Redwood Sash Doors strictly first class glazed with clear glass, 2 ft. 6 in. x 6 ft. 6 in. \$2.50. 2 ft. 8 in. x 6 ft. 8 in. \$2.60. A complete stock of all sizes. For Panel O. G. Doors White Pine size 2 ft. x 6 ft. \$1.22. 10,000 Used Doors from various wrecking operations. In this lot we have doors taken from small cottages and buildings ranging from 2 ft. x 6 ft. up to 4 ft. x 8 ft. in good condition at 40c. Also fancy glazed Front Doors for residences ranging in various sizes at \$1.50 and up. One of the largest barn doors used at the St. Louis Exposition, fancy design, strongly built, each \$2.00. Write at once for full particulars.

HIGH GRADE NEW MILL WORK

We are in better shape to quote low prices than any other concern on earth. We do not put our goods in the regular way. We purchase at Sheriffs' Sales, Receivers' Sales and Manufacturers' Sales. We can furnish you mill work of every kind and character. We can furnish everything needed in mill work, both regular and special. Send us memorandum of your requirements. Let us make you an estimate. Note our low quotations: Colonial Porch Columns, strictly No. 1 Poplar, trimmed, sizes, 6 in. x 6 in. 4 ft. long at \$1.25; 8 in. x 8 in. 4 ft. long at \$1.45. 6 in. x 6 in. 8 ft. long at \$1.70. 8 in. x 8 in. 10 ft. long at \$2.70. Fancy Porch Columns sizes, 4 in. x 4 in. 8 ft. long at \$5c; 6 in. x 6 in. 8 ft. long at \$1.15. 6 in. x 6 in. 10 ft. long at \$1.30. Fancy Porch Newels 4 in. x 4 in. 4 ft. long at \$5c. Stair Newels at \$3.15 and up. Angle Newels at \$1.90. Fancy Stair Balusters at 9c. Porch Balusters at 5c. Corner Beads at 10c. Base Angles per 100 ft. \$1.90. Porch Spindles at 2c. Porch Brackets at 7c. Fancy Face Brackets at 35c. Adjustable Cable Ornaments at \$1.25. Corner Blocks 2 1/4-c. Head Blocks at 4 1/2-c. Base Blocks at 4 1/4-c. Top Rail, per 100 ft. \$3.90. Bottom Rail per 100 ft. \$3.90. Quarter Round per 100 ft. 50c. In fact we can furnish at exceedingly low prices everything you can possibly require in mill work. Get our prices on Flooring, Shingles, Ceiling, etc.

BARGAINS IN WINDOWS

5000 Windows from various wrecking operations at prices ranging from 25c up. In this lot are a number of windows that are very fancy that will be sold at half the price of new ones. Fancy Front Windows brand new, high grade 1 3/8 in. check rail, they are up-to-date in design, bottom sash glazed with double strength clear glass, top sash with fancy ornamentations, size 3 ft. 8 in. x 5 ft. 2 in. \$4.90. 4 ft. x 5 ft. 10 in. \$6.25. Cottage Front Windows size 3 ft. 8 in. x 4 ft. 2 in. \$3.52. 4 ft. x 5 ft. 2 in. \$4.20. 4 ft. 6 in. x 6 ft. 2 in. \$6.09. Two light check rail Windows size 1 ft. 8 1/8 in. x 3 ft. 2 in. 63c. 1 ft. 1 1/8 in. x 4 ft. 6 in. 74c. 2 ft. 1 1/8 in. x 3 ft. 10 in. 81c. 2 ft. 2 1/8 in. x 4 ft. 10 in. 90c. Four light check rail Windows size 2 ft. 1 in. x 3 ft. 10 in. 70c. 2 ft. 5 in. x 4 ft. 6 in. 95c. Eight light check rail Windows size 2 ft. x 4 ft. 6 in. 77c. Ceiling Sash two lights, size 2 ft. 1 in. x 16 in. 35c. 2 ft. 9 in. x 20 in. 62c. 500 Storm Sash, first class, twolight brand new at 74c. 285 Fancy Windows from the St. Louis Exposition, each 60c. 1000 second-hand Barn Sash, each 52c. 5000 Used Sash from the St. Louis Exposition glazed with 1 1/8 in. ribbed factory glass in all sizes which we will sell at per sq. ft. 6c. All kinds of Window Glass, Plate Glass, Ribbed Sky-light Glass and everything required in Window Glass and Sash.

DON'T BUY YOUR BUILDING MATERIAL UNTIL YOU WRITE FOR OUR ESTIMATE

Rubberized Galvo Roofing

\$1.25 Per 100 Square Feet. The greatest Roofing value on earth. No higher grade manufacture. Unexcelled as to quality, wear and economy. Easy to put on. Requires no previous experience. Can be put on over shingles without removing them. Does not require a coating after it is on the roof. Weather-proof and fire-proof. Contains no acids, tar, resinous or injurious compounds. This roofing is bought direct from manufacturers and is usually sold at double our price. It is guaranteed to give lasting service. Rubberized Galvo Roofing is slate color, tough, leather-like material made of a combination of wool felt and highest grade of natural, pure asphalt. Makes buildings warmer in winter and cooler in summer. Not affected by acids or gases. Has rubbery surface and on this account we call it Rubberized Galvo Roofing. It toughens and hardens with age. We furnish with each order sufficient cement to make the laps and large head nails to put it on with. It is appropriate for any kind of building. 1 ply per sq., \$1.25. 2 ply per sq., \$1.40. 3 ply per sq., \$1.75. These prices are per sq. of 108 sq. ft., and are F. O. B. Cars, Chicago. Also have in stock 1000 sqs. of pure asphalt rock surfaced roofing bought by us at manufacturers' sale. Put up two to five lengths to a roll and each roll contains 108 sq. ft. Price per 108 sq. ft. including nails and caps, \$1.50. Red, Rosin-sized Building Paper per roll 500 sq. ft. 45c. Slaters Roofing Felt, per roll of 500 sq. ft. 75c. Write for free sample.

PLUMBING AND HEATING

\$1.25 for a White Enamel Kitchen Sink. 3,000 handsome cast iron, flat rim, white porcelain enameled, brand new Kitchen sinks 16 in. wide and 24 in. long, with nickel plated strainer and collar for connection, all ready to install. Kitchen sinks with backs, made in one piece at prices ranging from \$7 to \$15.

\$3.50 for a White Enamel Lavatory. In assorted styles and shapes for straight wall or corner of room. Our price is for lavatory slab, including waste plug, nickel plated overflow and brackets. Other styles including supply pipes, basin cocks and all nickel plated appliances, ranging in price to \$20.00. We carry in stock at all times everything needed for installing plumbing for a building of any kind. No other concern on earth has such an enormous quantity of brand new material for sale. Send today for our plumbing catalog.

White Enameled Bath Tub

\$6.00 buys a White Enameled Bath Tub. 600 "New Style" bath tubs, finest galvanized steel with the enamel baked on the inside, nicely finished on the outside, heavy wood rim, 5 ft. long. **Bath Room Outfits \$25.** With steel enameled tub, vitreous earthen closet bowl, polished, hardwood seat and tank, complete with nickel trimmings ready to install. Other complete outfits from \$35.00 to \$150.00.

Plumbing Material of all kinds at prices that do not represent cost of production. We buy at Sheriffs' and Receivers' Sales only; that's why we can undersell all. Send today for our low estimates on plumbing material.

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Book of Plans. We issue a Catalog containing Bungalows, Cottages and Barns. It contains information a proposition to supply complete, all the material needed for the construction of any one of these plans and in addition we will supply blueprints and complete specifications. It is valuable and will be sent free.

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New Ideas For New Floors

THERE'S a satisfaction in using Johnson's Wood Dyes on new floors that no stain mixed by yourself or any so-called "stain" already prepared can give you or your customer.

You have probably discovered that the "stains" you have used are simply surface coverings.

Johnson's Wood Dies are *Dyes*, not stains. They penetrate the pores, dyeing the wood the exact shade you desire, bringing out the beauty of the wood and accentuating it.

We have spent more than \$50,000 in research and experiment, to insure your perfect satisfaction with Johnson's Wood Dyes as a substitute for old-style methods and materials in wood finishing.

Johnson's Wood Dyes are made in fourteen shades, ready for use, thus saving you annoyance and mistakes in mixing.

These Are the Shades

No. 131, Brown Weathered Oak
No. 172, Flemish Oak
No. 126, Light Oak
No. 123, Dark Oak
No. 121, Moss Green
No. 178, Brown Flemish Oak
No. 132, Green Weathered Oak

No. 129, Dark Mahogany
No. 140, Manilla Oak
No. 110, Bog Oak
No. 128, Light Mahogany
No. 125, Mission Oak
No. 130, Weathered Oak
No. 122, Forest Green

Johnson's Wood Dye, any desired Shade, is sold by the best paint dealers. Insist on getting the genuine, don't take a substitute.

Half-Pints - \$.30
Pints - \$.50
Quarts - \$.85
Gallons - \$3.00



JOHNSON'S WOOD DYES

**When Old
Woodwork is to
be Refinished, Use
Johnson's Wood Finishes**

It's not an easy thing to remove paint and varnish from wood and leave the surface *just right* for refinishing.

Most paint and varnish removers contain a large percentage of paraffin which prevents a new finish from drying properly.

Johnson's Electric Solvo is the first requisite in refinishing old work. It is made by a special process which requires only one-fourth the usual amount of paraffin.

It *won't*—it *can't*—injure the new finish.

It is "Electric" in the rapidity with which it does its work.

It is free from offensive odor, will not soften the glue in joints and will not injure the hands or the finest fabrics.

The final touch to any job of wood finishing is given by *Johnson's Prepared Wax*, which imparts to wood a beautiful, soft tone and a finish that will not crack, peel or scratch or show heel prints, under the hardest kind of service.

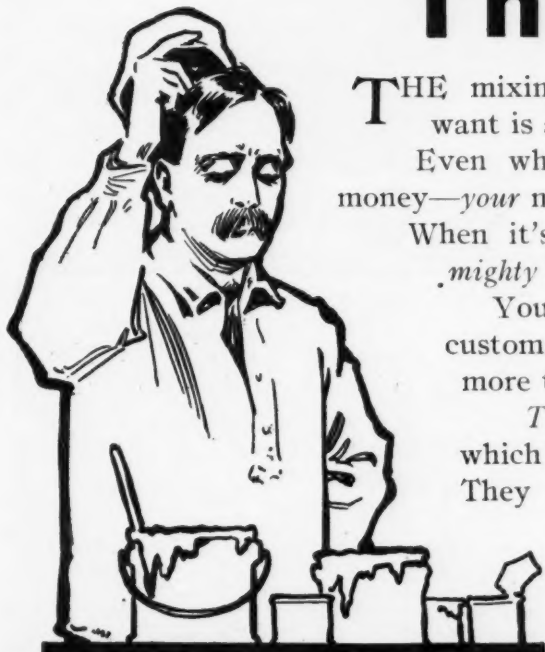
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If you fill out the coupon we will send you absolutely free of charge—two cans of Johnson's Wood Dyes, your choice of shades, one can of Johnson's Electric Solvo, and our handsome 48-page Text Book, "The Proper Treatment for Floors, Woodwork and Furniture." Write us today. Address

S. C. Johnson & Son Racine, Wis.
"The Wood Finishing Authorities"



A Puzzling Job For The Workman



THE mixing of wood stains to secure the precise color you want is a puzzling job for any workman.

Even when it's done right, it takes time and time costs money—*your* money.

When it's done wrong—when the mixture is off-color, it's *mighty expensive*.

You can't afford to pass off the mistake on your customer, so the stains must be mixed again. Then there's more time and more material to be paid for.

To avoid such experiences use Johnson's Wood Dyes, which are better than any other stains on the market. They require no mixing and do away with all the difficulties and mistakes of shading.

They save you time and money and please your customers.

JOHNSON'S ARTISTIC WOOD FINISHES JOHNSON'S

Johnson's Wood Dyes are Prepared in All Shades—Ready for the Workman

We import the colors used in them, because we cannot find their equal in this country.

The rich, luxurious finish you get with our Dyes cannot be obtained with any of the stains you mix yourself, or with the so-called "stains" you buy already mixed, which are simply wood coverings.

Johnson's Wood Dyes are *Dyes*. They penetrate the wood without raising the grain, thereby accentuating the high lights and developing all the beauty of the wood.

FREE TRIAL OFFER

Send us your name and address and name of your dealer on the coupon and we will send you absolutely free of charge two cans of Johnson's Wood Dyes, your choice of shades, a can of Johnson's Electric Solvo for removing paint and varnish, and our handsome 48-page Text Book on "The Proper Treatment for Floors, Woodwork and Furniture." Write us today. Address

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cinnati, O.; 106 W. Michigan street, Duluth; 342 E. Washington street, Indianapolis; 948 N. Y. Life building, Kansas City; 232 Bradbury building, Los Angeles, Cal.; 1112 Railway Exchange, Milwaukee; 507 W. Broadway, New York City; 904 Hennen building, New Orleans; 1022 Fulton building; Pittsburg; 608 Chestnut street, Philadelphia; 38 Exchange street, Rochester, N. Y.; 1022 Carleton building, St. Louis; 615 Ryan building, St. Paul; 245 Oak street, San Francisco; 31 Maynard building, Seattle, and Builders' Exchange building, Dallas, Tex. Write any of the above for catalogues.

Tiffin Art Metal

It is a pleasure to recommend to our readers a line of goods which we know will "make good," and more, to every good thing we may say about them. For this reason the products of the Tiffin Art Metal Company, Tiffin, Ohio, are recommended unreservedly and with peculiar pleasure by us to special attention on your part.

These products comprise two general classes: The Art Metal ceiling and side walls, designed with the well-known double bead lap which produced the perfect joint—absolutely dust proof and invisible; and the "Never Leak" shingles, made of Apollo Vandegrift galvanized iron in the most mod-



ern scientific way. It has been fully demonstrated that a roof fitted with these shingles cannot leak. The interlocking principle is so complete that for water to get through the shingles it would have to run up hill (against the laws of Nature), and a long way up too. These shingles cannot warp, rot, split or absorb water and remain damp. Of course they are fireproof. Sun and frost do not affect them.

Doubtless a very large number of the readers of the AMERICAN CARPENTER AND BUILDER are already familiar with these Tiffin Art Metal Company products from actual experience, and the use of them in first-class, up-to-date building. To these we need say nothing. The others owe it to themselves and to their clients to become thoroughly informed as to these goods.

Complete illustrated catalogues will be mailed promptly on request by the Tiffin Company.

Principles of Heating

There are few subjects which appeal so thoroughly to the property owner or householder who is obliged to obtain some mode of protection from the rigors and discomforts of cold weather, as the practical consideration of heating and ventilating as applied to efficient warming and ventilation.

Following are the different modes:

Heating by Stoves.—This is a method which in many localities is no longer tolerated. The stove takes much more fuel to heat by a stove than with a good hot air furnace. There must be a stove in each room to be warmed. Each stove wastes as much heat into the chimney as would a furnace.

There are also serious objections and disadvantages to

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Opportunity knocks once at every man's door. Are you prepared to grasp it? A knowledge of drawing has given many a man an opportunity to gain a position of responsibility and trust with fine pay.

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Four volumes, 2,000 pages, 7x10 inches in size, 1,500 illustrations, tables, formulae, etc. Bound in half red morocco leather. The most complete general reference work on drawing yet published for carpenters and builders. Tells them how to read plans and also how to draw them. Architectural Drawing, Lettering and Blue Printing are some of the many subjects treated especially for ambitious carpenters and builders.

This work offers an unusual opportunity to get a good knowledge of drawing without the aid of a teacher. It is entirely free from technical descriptive matter, so hard to understand, and every section is supplemented by many practical test questions, "short cuts," etc. It is equally valuable in the shop, the drafting room, or the home library.

FREE FIVE-DAY OFFER AT LESS THAN HALF PRICE

To acquaint people interested in drawing with the high standard of our instruction, we will for the next 30 days send these books by prepaid express for 5 days' free examination, and cut the price from \$20.00 to \$9.80. Terms \$2.00 within five days, and \$2.00 a month until the special price of \$9.80 is paid. If the books do not meet your requirements, notify us within five days and we will remove them at our expense.

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American School of Correspondence:

Please send set Cyclopaedia of Drawing for 5 days' free examination. I will send \$2.00 within 5 days and \$2.00 a month until I have paid \$9.80; otherwise I will notify you to send for books. Title not to pass until fully paid.

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OCCUPATION.....

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THE ROOFING PRICE REVOLUTION!

**We are Responsible
For It!**

**Mr. Contractor—
Mr. Owner—**

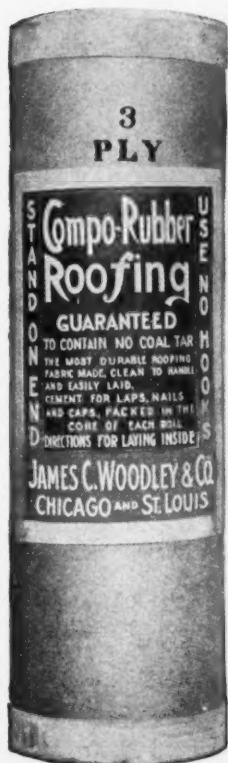
As the result of our enterprise and immense facilities the very best ready roofing—backed by a Ten-year-roof-Insurance "Guarantee" is now being sold at the lowest prices ever quoted.

From this time on ready roofing will be sold and priced as

A STAPLE

VS

A HIGH PRICED SPECIALTY



"Compo-Rubber" and "Weatherproof" Rubber Roofing are the World's Best in Quality

"Compo Rubber" Roofing" and Weatherproof "Roofing will not crack, break melt, rot or leak. They possess the **longest durability** and the **shortest cost** of any other prepared roofing on the market.

We own our own asphalt mine—the only one in the United States producing asphalt that is **99% pure Bitumen**. We manufacture our own wool felt and saturate it with our own compounds and apply our own coatings. In fact we produce everything from beginning to end that is used in making our roofings.

Our "Ten-Year-Roof-Insurance" Guarantee

Knowing that we are making the most durable and lasting roofing fabric that can be produced we back this knowledge with a legal document form of "Ten-Year-Roof-Insurance" Guarantee which can be obtained from any dealer.

Send to-day for information as to our "Ten-Year-Roof-Insurance" Policy and **FREE SAMPLES** of these roofings.

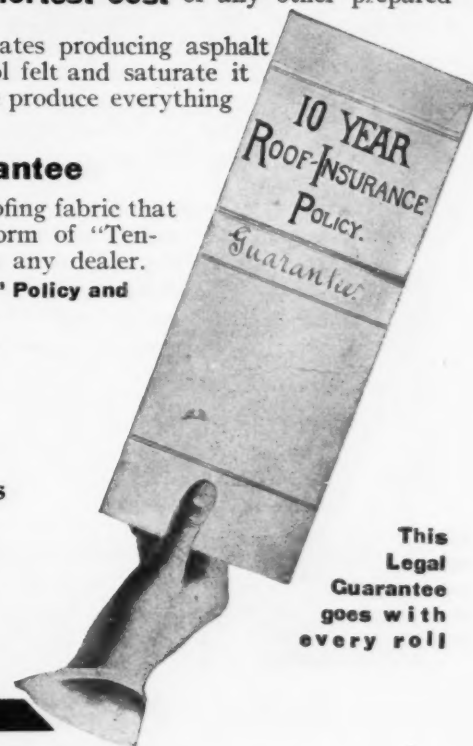
We Manufacture at our New Mill

"Compo-Rubber" Roofing	Asphalt Roofing
"Weather Proof Roofing	Building Paper
Flint Coated Roofing	Tarred Felts
Gravel Surface Roofing	Deafening Felts

The entire interest of Jas C. Woodly & Co., Chicago and the Weatherproof Mfg. Co., of St. Louis are now consolidated with General Roofing Mfg. Co.

General Roofing Mfg. Co.

East St. Louis.
Chicago.
San Francisco.



**This
Legal
Guarantee
goes with
every roll**

heating by steam or by hot water. These objections marked up against the other systems can not be placed against heating by hot air. With it the entire apparatus is in the cellar and requires no extra space whatever in the living apartments. It forces ventilation, which is absolutely essential to health and comfort, a feature that alone makes hot air heating superior to any of the others. The heat can be regulated to conform to the outdoor temperature; therefore there is no overheating in moderate weather. This system is easily managed. With a properly constructed hot air furnace almost any twelve-year-old child can take care of it the entire season. It is inexpensive to install and keep in repair, and for economy in maintenance it rivals all others. We are conscious of the fact that many failures have been scored against this method, but we venture the assertion that every failure can be traced directly to one or more of the following causes:

1. The furnace selected, a light steel construction, which rusted or burned out.

2. If a tubular furnace, with an unequal expansion and numerous joints, which either crack or open up and leak smoke and deadly gas.

3. If a poorly constructed, cheap apparatus, with almost a direct draft that allows the greater part of the heat to go up the chimney.

4. If a good apparatus, the one selected was too small to do the work required.

5. If none of the errors stated above are made, then the furnace was not properly located. Hot air pipes or cold air duct were of insufficient capacity, or some other defect which an expert on the ground would readily discover. Every one who will investigate the various methods and decide the matter solely on its merits, must, we believe, conclude with us that if the system is properly installed, the results obtained

will come nearer perfection than any of the other systems.

Having proved the superiority of heating by hot air, to decide upon the best hot air furnace is not hard. The Niagara furnace, made by the Forest City Foundry and Manufacturing Company, of Cleveland, Ohio, is so far ahead of all competition that to choose it is only reasonable. We would heartily urge all members of the AMERICAN CARPENTER AND BUILDER family to write this company for full information on the important subject of heating.

Successful Draftsmanship

Often a contractor or builder is called upon to submit a plain sketch or a complete business-like looking set of plans,

for which he could charge a good price or in return receive a good fat contract, but is unable to do so on account of not having the ability which he would have, if he had taken a course of thorough practical training along this line.



Mr. F. V. Dobe, M. E., and chief draftsman of the Engineer's Equipment Company, 99 Washington street, Chicago, has for many years been giving personal and individual instruction in complete architectural drawing and building design, and is

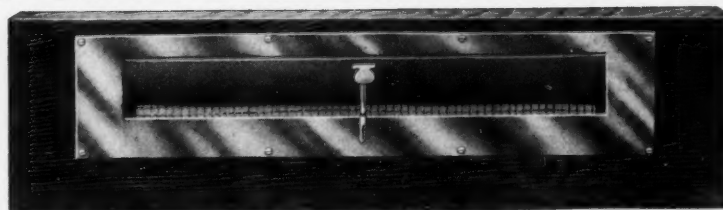
meeting with remarkable results and success in qualifying the most inexperienced man with ability, in a short time, to make A-1 drawings, designs and all details.

Many a contractor and builder is wasting a lot of time in

PERFECT VENTILATION SOLVED AT LAST The HARRIS SASH VENTILATOR DOES IT



THIS device is installed in the sash, new or old, upper or lower or both, and diffuses a continuous current of fresh air through a room; it breaks the direct current thereby eliminating direct draughts.

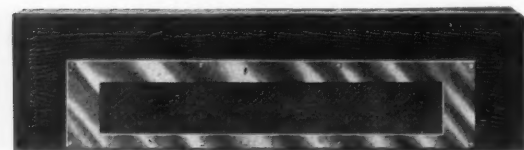


An absolute necessity for sick rooms, toilet rooms, sleeping rooms and hospitals. Recommended by medical men and specified by practical architects everywhere.

Unique in simplicity, effective in use. Can be left open during a storm without fear of damage. No danger from burglars—the window can always be closed and locked. Simple to adjust. Easy to install. In short, the only device that can be relied upon at all times, day and night.

The Harris Ventilator is compact and of good appearance. Made in three sizes, having 6 inch air space, 10 inch air space and 15 inch air space respectively.

The essential part of this device is the shutter which can be adjusted to three different positions, according to the temperature or wind velocity outside.



Harris Ventilators are made of solid brass in various finishes; dull brass, polished brass, oxidized, gun metal, etc., but are finished in dull brass with outside plate oxidized, unless otherwise specified. Supplied with or without sash lift. Price of 6 inch \$1.25 each, or with sash lift \$1.35. Samples by mail on receipt of price. Further information if you write.

BRANCH & CO., Sales Mgrs., 920 White Bldg, Buffalo, N. Y.

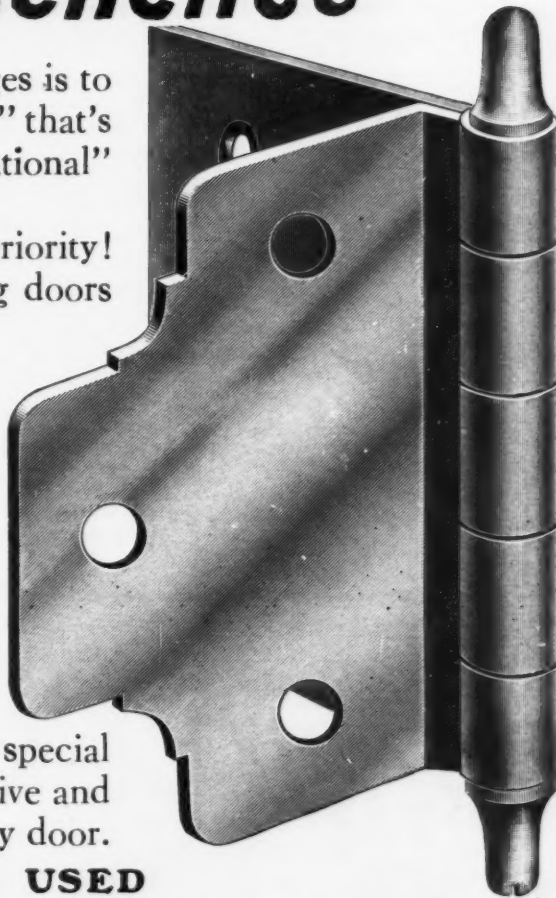
"NATIONAL"

MEANS *Hinge Excellence*

THE WAY to tell good butts and hinges is to look for the name. If it's "National" that's all you need to know. If it isn't "National" look again.

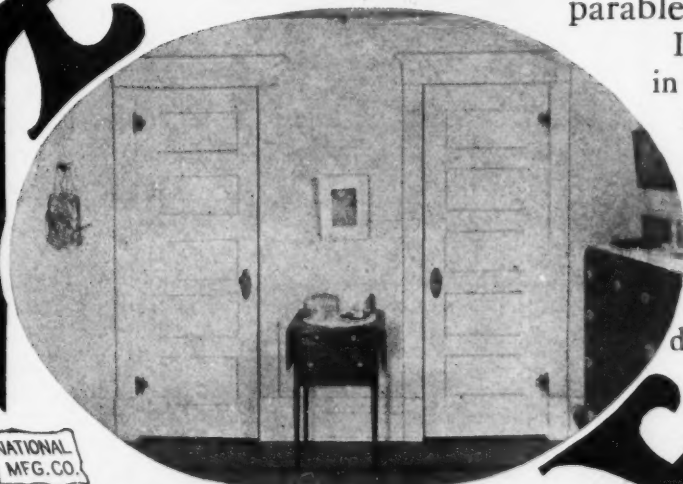
Of course you've heard about the superiority! The simplicity that cuts cost of hanging doors down to one half:—the slot in the lower tip for a screw driver, making it easy to remove pin:—the durability that is obtained by subjecting screws to a shearing strain:—and then—the individuality of every design.

"National" Ornamental Butts and Hinges are made 'right'. We supply them in all sizes from 1½ to 4½ inches inclusive, in steel, brass or bronze—in all standard finishes or we can match any special finish on short notice. Beautiful exclusive and unique designs that impart a finish to every door.



UNIVERSALLY USED

In all kinds of public buildings and private residences—in America and Canada. "National" Butts and hinges are giving incomparable satisfaction.



It will pay you to become interested in these products. Send for the booklet, "Ornamental Ideas". It is well illustrated with new suggestions for door ornamentation and contains useful pointers for carpenters and contractors. We send it free on request — but just mention your dealer's name when writing.

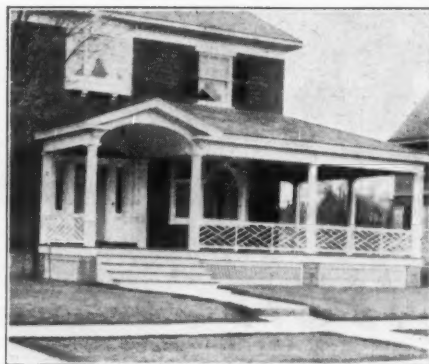
National Mfg. Co.

Sterling, Illinois

NATIONAL
MFG. CO.

NATIONAL
MFG. CO.

Cheery,
Fast
Colors



For
House
Trim-
mings

LINDURO Highest Grade of Enamel

FOR OUTDOOR AND INDOOR WORK

Commended by every architect and painter who has used it. Linduro works easily, does not pull, has no runs, laps or wrinkled edges, and shows no brush marks; covers remarkably; does not crack, peel or lose its gloss; wears a great number of years without turning yellow; keeps its beauty whether in gloss or rubbed finish; may be tinted for special decorative purposes.

Used on the outside of houses for trim, porches, etc., on wood, iron, concrete or any other material, for it is impervious to water—fresh or salt.

Used on the inside of houses, on any surface—wood, plaster, brick, porcelain, glass, tile, etc., because it is water proof and soap proof—may be scrubbed clean without injury. It adds beauty to tile, brick or pine work, bringing out the soft effects of relief and giving a remarkably hard ivory effect to the surface.



"The Little
Blue Flag"

—Your
Protection

It carries the "Little Blue Flag"—Your Protection.

Samples and sample panels on application. Consult Sweet's Index, pp. 1378 and 1379.

THE LOWE BROTHERS COMPANY

Paintmakers Varnishmakers

450-452 E. Third Street, Dayton, Ohio
New York Chicago Kansas City

Amatite



MINERAL SURFACED
NEEDS NO PAINTING

UNTIL Amatite was put on the market a few years ago, practically everybody who used ready roofings had to paint them regularly. Some of the roofings required a coat every year; others every two or three years.

In all cases a good deal of expense and trouble was involved.

The popularity of Amatite is largely owing to the fact that its use does away with all such trouble and expense. This is due to its real mineral surface which is far more durable than any paint made. It is not affected by weather and will last indefinitely.

All that is necessary after laying an Amatite roof is to leave it alone. Leaks and dissatisfaction are left behind.

Every practical man will doubly appreciate the "no-paint" idea when we add to that statement the fact that Amatite is lower in price than most of the "paint-me-every-two-years-or-leak" roofings.

In addition, Amatite with its smooth lap edge is easy to lay, and the necessary nails and liquid cement for laps are supplied free, packed conveniently in each roll.

Can any reasonable man ask more?

A Sample Free. Write to nearest office to-day

Illustrations at top, from left to right, show: Chas. Johnson's Residence, Atlantic City, East Machias Lumber Co., East Machias, Me., Walton Skating Rink, Lockport, N. Y. All covered with Amatite.

BARRETT MANUFACTURING CO.

New York Chicago Philadelphia Boston Cleveland Cincinnati
Minneapolis St. Louis New Orleans Pittsburg Kansas City

studying over plans and drawings submitted, in order that he may fully understand the details. A course of instruction under Mr. Dobe will prepare him to look rapidly over drawings and to thoroughly understand them at a glance, thus saving loss of money by mistakes, embarrassment and time.

His instructions are given by mail, but must not be compared with the ordinary correspondence school instructions, as all the work is laid out personally by himself and prepared especially for the student's individual requirements. With his method he is able to satisfy and educate any absolutely inexperienced or experienced man who is willing to better himself.

Mr. Dobe sells no diplomas, but insists on your work being a more practical diploma and a proof of your proficiency. He guarantees by contract to qualify you in a few months' instruction to be able to turn out absolutely perfect plans, designs and complete details, or to hold a first class draftsman's position, as he instructs you until competent.

Mr. Dobe furnishes his students, as a premium for best drawings and to make best drawings with, one of the finest complete drawing outfits, which is herewith illustrated. It contains a full set of German silver instruments, worth \$13.85. He offers this free to students starting this month.

His successful draftsmanship book, size 6 by 9, will be sent to and one interested for 4 cents in stamps to cover cost of mailing.

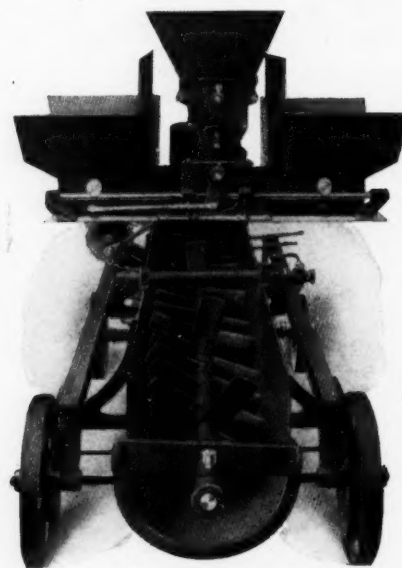


The New Grand

At the present time to one who is connected in almost any way with concrete, a cement mixer is not only a desirable but an absolutely essential part of equipment. By its use

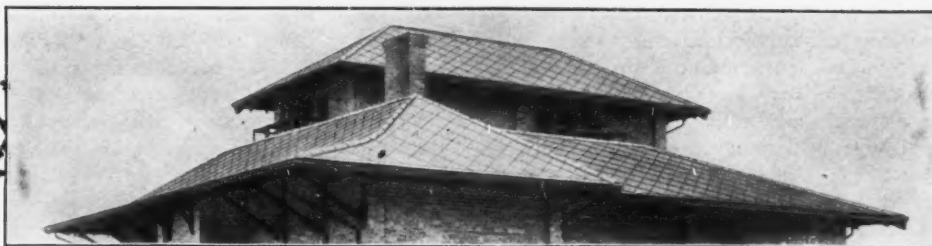
time, money and labor are saved; and, if the mixer is a good one, absolute accuracy is assured in mixing the aggregates. This feature is one upon which great stress can be laid.

Before putting the Grand Mixer on the market, Hall-Holmes & Co. of Jackson, Mich., spent many months perfecting it; when it was first put out they knew by actual experience that the Grand would do everything claimed



for it. Their claims are strong indeed. One of its strongest features is the fact that it is built light and extremely strong and is easily portable. The Hoppers on the Grand are built lower than on any other mixer now being manufactured, which fact makes the shoveling much easier for the men. The discharge is higher from the ground than on any other mixer. In the construction of the Grand there are absolutely no small or delicate parts to get out of order and proportions

In the construction of the Grand there are absolutely no small or delicate parts to get out of order and proportions are easily and quickly made without stopping the machine.



Asbestos "Century" Shingle Roof—Cedarburg Station, Milwaukee Northern Railway Company.
Comstock, Haigh-Walker Company, Contractors.

Asbestos "Century" Shingles

"The Roof that Outlives the Building"

When a houseowner's roof rusts, or rots, or cracks, or needs painting, or does anything else that annoys him or costs him money, he blames the architect or builder—not his own desire to "save" on first cost.

Asbestos "Century" Shingles preserve good feeling all around. Their first cost is no higher than any other roofing regarded as first-class, and there is no cost of upkeep—no painting or repairs. They cannot decay. They are proof against fire.

Asbestos "Century" Shingles are shingles—like sheets of asbestos-fibre cement, formed and made dense and elastic by tremendous hydraulic pressure. Applied like any shingle or slate. Made in three colors—Newport Gray (silver gray), Slate (blue black), and Indian Red, in numerous shapes and several sizes. Five cents per square foot (and upwards) at Ambler, Pennsylvania. Write for Booklet "Roofing 1908."

The Keasbey & Mattison Company

Factors

Ambler, Pennsylvania

Your Success IS OUR *Necessity!*

We Want to Show You Why

Can you afford to figure a job of Metal Ceiling unless you are sure the cost of erecting will not exceed your estimate? Your success is our necessity because you will not buy our ceilings unless there is profit in them for you and satisfaction for your customers. Most of your success depends upon the fit.

We Have Solved the Problem

Our Double Bead Lap produces a thoroughly dust-proof and invisible joint. It is simplicity itself. Easy to fit, therefore cheapest to erect. This means profit and satisfied customers to you.

Another Secret

The great variety and high character of our Art Metal Ceiling and Sidewall Designs insure the customer's preference when shown our Catalogue. Send us plans with all measurements and we will prepare drawings of appropriate ceilings, without charge, and name you low price on all material, F. O. B. your station. Get our catalog right away.



The "Never Leak" Shingle

Made on a modern scientific principle, of Apollo Vandegrift Galvanized Iron, this latest and most remarkable roofing supersedes anything made. Rather a sweeping statement—but read the reasons on which it is based.

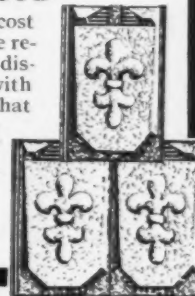
Unique Features of a Unique Roofing

First: A roof fitted with this shingle cannot leak. The interlocking principle is so complete that for water to get through the shingles is against the laws of nature. Water cannot run uphill, yet that's the only way it could enter a roof of "Never Leak" Shingles.

Then they positively cannot warp, rot, split or absorb water and remain damp. And of course they're fire-proof. Sun doesn't affect them. Neither do the severest climate conditions.

Cost Compared with Wood

Figure up what wood shingles have cost you for the last ten years. Consider the repair bills, inconvenience and all around disadvantages, and compare the cost with everlasting "Never Leak" shingles that remain as good as new as long as the building lasts. We tell you "Never Leak" shingles are cheaper. Send for literature and be convinced.



THE TIFFIN ART METAL CO., Tiffin, O.
39 Broad St.

Its construction is such that you can change from a 16 to 1 to a 2 to 1 proportion in five short seconds. Very little chain is used on the machine. There are no feeders to clog up, no matter what the material may be, even wet and sticky; it will handle the materials and proportion them with absolute accuracy and give a thoroughly even and uniform mix of the same, in the dry state. All parts liable to wear are made interchangeable.

Special care has been taken in the design of the Grand. It has been built to give the most possible service for the least amount of effort, and people who are at present using the Grand are the ones who sing its praises. It is very easily cleaned and very easily kept clean; mixing is open to view at all times and water is under perfect control.

Your name and address on a post card or in a letter mentioning this paper will bring you further particulars. It will pay you to investigate it.

The Hickman Memorial Hall

By the erection of the above building at Graniteville, Ga., the Graniteville Manufacturing Co. have not only raised a splendid monument to the memory of their deceased president, Mr. H. H. Hickman, whose name it bears, and in whose honor it was erected, but they have shown a broad minded policy toward their employees that is bound to win their approval and further stimulate their co-operation, which has been such a factor in the upbuilding of the concern.

The building was designed by Messrs. Macmurphy and Story, architects of Augusta, Ga., and consists of three stories. In the basement there is a large swimming pool, shower baths with hot and cold water, two bowling alleys, toilet rooms, etc. On the floor above is situated the library containing over one thousand volumes, an office, amusement rooms for both sexes, large hall, waiting room and toilet rooms with all necessary accessories.

On the top floor is a gymnasium occupying the entire floor. This room is filled with all the latest and best appliances for exercise, dancing, social gatherings, etc.

The erection of the building cost \$30,000 and was built solely for the free use of the employees of the company. That it has been built with the idea of endurance can easily be seen from outward appearances without the necessity of going into the details of construction. There has been no attempt at fancy adornment except on the roof, which is



composed of Cortright metal shingles, the embossed design of which is very pleasing to the eye and serves to attract attention to the building, although this had no consideration in the selection of the material—the principal feature considered that led to their selection being the wear; the manufacturers claim that they will last as long as the building itself, and if



A 40-YEAR RECORD BRINGS ANOTHER ORDER FOR

"TARGET & ARROW OLD STYLE" TIN

THE RESIDENCE of Miss Jane Bierre of Huntsville, Alabama, is one of the show places of the South. A portion of the house was covered with our "Target-and-Arrow Old Style" tin forty years ago and because of the remarkable service it has given, "Target-and-Arrow" tin has been selected to replace the shingles on the main building. That part of the roof which is covered with our tin will not be disturbed, as it is still good for many years to come.

Forty-year records for "Target-and-Arrow Old Style" tin are not uncommon, nor will they be forty years hence, for this brand of tin offers the same durability to-day as it did in the past.

A Target & Arrow Old Style Tin Roof

twice saved this building from destruction by fire



THIS WAREHOUSE affords a convincing illustration of the fire-proof qualities of "Target-and-Arrow Old Style" roofing tin. It is located in Philadelphia and owned by S. D. Humberger. In the spring of last year the building adjoining was destroyed by fire, rebuilt and again destroyed by fire in the fall. At the time of both fires the wind carried the flames and sparks directly across the roof of the warehouse, but without damage to the building and the tin itself required only a re-soldering of some of the seams and a new coat of paint.

No roofing material manufactured offers the fire-resisting qualities of tin. No tin manufacturer offers the weather-resisting qualities of "Target-and-Arrow Old Style." It makes the safest, most sanitary and most serviceable roof for any building.

A Chicago architect states:

"I have used 'Target-and-Arrow Old Style' tin for twenty years, and have found it always satisfactory. When I specify it I specify it alone."



Thirty-Year-Old "Target-and-Arrow Old Style" Tin, Used for a New Roof

This is a picture of the Tremont Hotel, of Houston, Texas, as it is to-day. The original building was built in 1873. At that time the building was roofed with "Target-and-Arrow Old Style" roofing tin. In 1903, when they came to tear down the old building to erect a new one, O. H. & P. Rudolph, the architects, found the "Target-and-Arrow" tin on the old building in such perfect condition that the old tin was taken off and relaid on the new building. The tin is to-day in as perfect condition as it was thirty-five years ago.

We have in our possession a piece of our tin taken from a residence at Edgewater Park, N. J., put on in 1875, in active service for thirty-five years and never painted but once. The sample is just as good to-day as it was when put on. This sample and all the evidence can be shown to any one who wishes proof as to the durability of "Target-and-Arrow Old Style" tin.

A contractor at Titusville, Fla., writes:

"I have been using your tin here for the past five years, and have never had any trouble or complaints from my customers. If I was permitted to use your tin on this particular house I could afford to give a fifteen year guarantee, as I was sure your tin would stand the test."

These cases show the value of
Taylor's  Old Style Brand
roofing tin as a
durable, weather-proof, fire-proof roofing

N. & G. TAYLOR CO.

SOLE MANUFACTURERS

ESTABLISHED 1810

PHILADELPHIA

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



STEP OUT of the Dinner-Pail Class

This applies to **YOU**. Whether you carry a dinner pail or not, if you are poorly paid and dissatisfied you are the man we wish to reach. Here's your chance to step out of the dinner-pail class forever—a chance to move to a higher position—to become an expert—to succeed in life. Mark and mail the coupon as directed and the I. C. S. will, free of all charge, send advice of great value to you since it has been gained from 17 years' experience in enabling hundreds of thousands of men to better their positions and salaries. Men who were no better situated than you; men with little schooling; men in dollar-a-day positions; men with no hope of anything better—thousands of such men have through the help of the I. C. S. training doubled, tripled, and quadrupled their earnings. **BUT THEY MADE THEIR START BY MARKING A COUPON LIKE THE ATTACHED.** Make your start today. You need not leave your present work; only a small part of your spare time is required; and everything is arranged to meet your personal needs and circumstances. In gaining any kind of success **INITIATIVE WINS**—send the coupon **NOW**.

International Correspondence Schools

Box 910, Scranton, Pa.

Please explain, without further obligation on my part, how I can qualify for a larger salary and advancement to the position before which I have marked **X**.

Architect	Estimating Clerk	Foreman Mach'st
Arch'l Draftsman	Bridge Engineer	Sh.-Met. Pat. Drfts.
Contr. & Builder	Civil Engineer	Mining Engineer
Building Inspector	Surveyor	Textile Expert
Struct'l Engineer	Mechanical Eng.	Bookkeeper
Struct'l Draftsman	Mechanical Drafts.	Stenographer
Plum. & Heat. Con.	Stationary Eng.	Ad Writer
Supt. of Plumbing	Electrical Engineer	Window Trimmer
Form. Steam Fitter	Electrician	Illustrator
Plumbing Inspect'r	Elec.-Light. Supt.	Civ. Ser. Exams.
Heat. & Vent. Eng.	Elec.-Ry. Supt.	Chemist

Name _____

Street and No. _____


City _____

State _____

SEND FOR OUR CATALOG "HOME HEATING"

HOT-WATER HEATED \$198

by **ANDREWS SYSTEM** EACH



14 ANDREWS HEATERS IN ONE BLOCK AVERAGE PRICE \$198.00

IT IS WELL WORTH READING

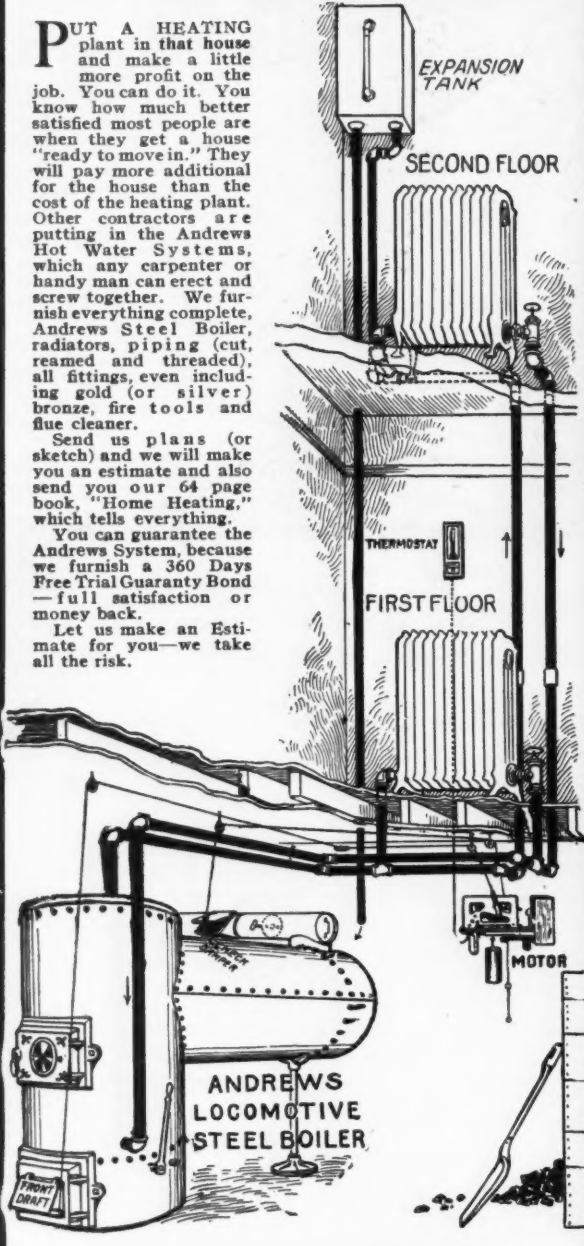
PROFIT FOR THE CONTRACTOR

PUT A HEATING plant in that house and make a little more profit on the job. You can do it. You know how much better satisfied most people are when they get a house "ready to move in." They will pay more additional for the house than the cost of the heating plant. Other contractors are putting in the Andrews Hot Water Systems, which any carpenter or handy man can erect and screw together. We furnish everything complete, Andrews Steel Boiler, radiators, piping (cut, reamed and threaded), all fittings, even including gold (or silver) bronze, fire tools and flue cleaner.

Send us plans (or sketch) and we will make you an estimate and also send you our 64 page book, "Home Heating," which tells everything.

You can guarantee the Andrews System, because we furnish a 360 Days Free Trial Guaranty Bond—full satisfaction or money back.

Let us make an Estimate for you—we take all the risk.



ANDREWS HEATING CO.

954 Heating Bldg. MINNEAPOLIS 983 Marine Bldg. CHICAGO

Andrews Systems are now at work in over 700 cities and towns

MANUFACTURERS CONTRACTORS CONSULTING ENGINEERS

this is the case the employees of the Graniteville Manufacturing Co. have not only a building that they can point to with pride, but one that will perpetuate the memory of the man in whose honor it was erected for many decades to come.

Two Ingenious Brackets

The Taylor Steel Scaffold Bracket is made of the best quality 1½ by 1½ by 3/16 inch angle steel; brace notched into the top and sides in addition to being riveted. A single pair will carry a full ton load without even springing. The holding bolt is a special feature; it hooks around studding instead of going through it. This steel scaffold bracket is made in two sizes, 48 and 60 inch.

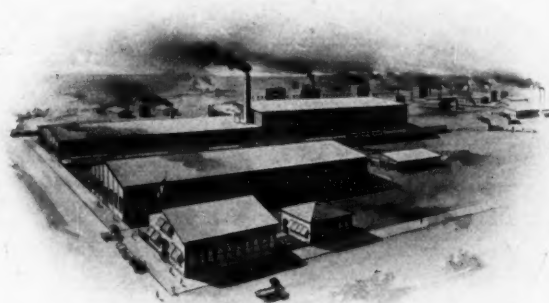
Another bracket of great value to builders, constructed on much the same principle, is the steel roofing bracket made by the James L. Taylor Company. It is adjustable to any pitch roof. When using it, the shingles are laid right over the bracket, which is afterward easily removed without leaving nail holes exposed. This bracket, like the other, is made entirely of steel. It folds up when not in use. The strength of this bracket was recently demonstrated: A single bracket held 6 men, balanced on a hemlock plank—total weight, 1002 pounds.

All builders should write the James L. Taylor Company, Bloomfield, N. J., for full particulars in regard to these improved scaffold and roofing brackets. They are cheaper, stronger and more durable than the old wooden kind.

New Plant

One of the most progressive sheet metal manufacturers in the country is The Kanneberg Roofing & Ceiling Co., of Canton, O. The quality of their product has won for them such an enormous trade that it was necessary for them to have larger quarters. The illustration shows their new plant, which is equipped throughout with new and up-to-date machinery, which enables them to execute orders promptly, with the best material that skilled labor can produce.

While they make everything in sheet metal, they make a specialty of art metal ceilings and sidewalks of classified designs suitable for all classes of the trade. One of the par-



ticular points claimed for the ceiling plates is that after being stamped they are resheared on all sides, which makes them accurately straight and regular so that they are interchangeable, close fitting and water and dust proof in the joints, so that no labor or expense is entailed in putting.

That the metal ceilings they manufacture are becoming more popular is indicated by a statement made by the company that their business not only in ceilings but all lines, has been good notwithstanding general adverse conditions, so good in fact that they have been compelled to work nights for some time.

They issue two catalogues, catalogue D relating to metal-

What's the difference?

Genasco is as different from other roofings as wool is from shoddy, or gold from pyrites.

You can't always tell from the looks, but the difference soon shows in the wear.

Genasco Ready Roofing

is made of Trinidad Lake Asphalt—Nature's everlasting Waterproof. Other roofings are made of—who can tell?

Ask your dealer for Genasco. Insist on getting it. Look for the trade-mark. Mineral or smooth service. Write for samples and Book 76.

THE BARBER ASPHALT PAVING COMPANY



Largest producers of asphalt, and largest manufacturers of ready roofing in the world.

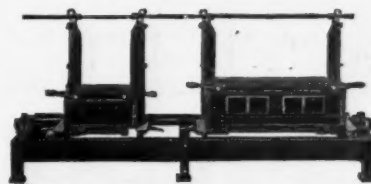
PHILADELPHIA

New York San Francisco Chicago

If you are going to open a Concrete Block Plant, don't handicap yourself by starting wrong. Get a reliable machine—one with a reputation back of it.

HERCULES CONCRETE BLOCK MACHINES

ARE NOT EXPERIMENTS



They have the reputation of years behind them; the world's best engineers endorse them, because

They are Unlimited as to Production

They Enable you to Supply Superior Grade of Stone

They are Simple in Construction

Easy to Operate

Send to-day for beautifully illustrated catalogue, showing our complete line of Concrete Machines. IT WILL PAY YOU.

CENTURY CEMENT MACHINE CO
273 Main St. West, ROCHESTER, N. Y.

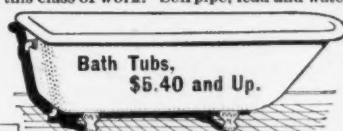


Money Saving Catalog Free

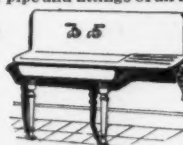
PLUMBING AND HEATING MATERIAL

Direct to the Consumer at Factory Prices

Our perfect ALL IRON PIPE system of plumbing will enable any handy mechanic to install the material on farm or in city. Send us a list of your needs. All we ask is an opportunity to figure on your wants. We carry everything necessary for installing this class of work. Soil pipe, lead and water pipe and fittings of all kinds, etc. All goods are brand new and high grade.



Bath Tubs,
\$5.40 and Up.

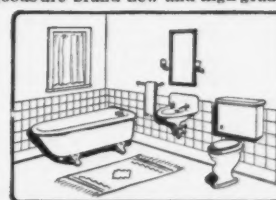


HANDSOME
ROLL RIM
KITCHEN SINKS

All kinds of Porcelain Enameled Kitchen Sinks, with backs, drain boards, etc. Our stock is complete with sinks of every description, both for corner or straight wall.



This Complete
Closet Outfit,
\$11.50.
Low Tank
Closet like
shown in bath-
room cut for
\$11.25.



COMPLETE BATHROOM OUTFITS,
from \$24.50 to \$125.00.



White Enameled
Iron Sinks
18x30 for \$1.85

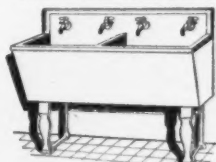
WHITE ENAMELED ROLL RIM
SINK BACKS for \$2.25.

READY ROOFING

Mill Ends of \$2 and \$3 grades of Vulcan Roofing, several pieces to each roll of 108 square feet at

95c Per Roll

Order quick while it lasts.



CEMENT STONEWARE LAUNDRY TUBS

Cast seamless in hydraulic mould, with zinc metallic rim—furnished with cast iron legs—

\$3.95 AND UP.

Write today for new enlarged Catalog No. 108 covering Home Builders supplies. All prices revised to "Hard Times" basis.

IMPROVED ROTARY WASHING MACHINES. Made to sell at \$6.50 each. We bought them from the Underwriters. They are a little scorched but not otherwise damaged. A soap at \$1.95 each while they last.



HOME WATER WORKS Air Pressure Water Supply Systems

For the country or suburban home. Sun-proof, frost-proof, at \$40 and up.

HEATING PLANTS

Don't think you cannot afford a modern Hot Water or Steam Heating Plant till you get our figures. Special price for first plant in each locality. Plans free. Tools loaned.



We send FREE detailed estimate on receipt of rough sketch or plan of the building to be heated. Prompt attention. Quick shipment in time for this winter.

Money
refunded
if not
satisfied.

Central Machinery & Supply Co.

553 S. State St.
Chicago

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

PEARSON'S IMPROVED NAILER

A Hand Nailing Tool!



Especially adapted for driving shingle nails. Its weight is about two pounds and can be used with gloves or mittens on in any season. It can be used on a roof of any pitch as well as on a level surface. It is a time saver and a money maker and a great advantage over old way of driving nails.

Ask your dealer for it or write.

Pearson Mfg. Co.
Robbinsdale, - Minnesota

EVERYBODY



USES CLIMAX or VERIBEST ROOFING YOU CAN LAY IT YOURSELF

It Costs So Little. Costs one-fourth as much as shingles, and lasts twice as long. We are manufacturers. Our prices lowest. **We pay the freight.** We guarantee safe delivery—making good any damage or shortage of R. R. Co.

So Quickly Done. We ship from the nearest Branch Warehouse same day order is received. Roofing is in Rolls 108 sq. ft. each. Covers 100 sq. ft. of surface. All materials furnished. Anybody can lay it who can drive nails. Can be laid over old shingles.

So Durable. Long fibre felt—every thread thoroughly saturated with pure Asphalt. No coal tar. Coated with pure Asphalt. Light—strong—elastic—almost everlasting—more so than metal or shingles. Adapted for flat or pitched roofs, and for sides.

Weather-Resisting. Coldest weather can't damage it, nor make it hard or brittle. Always flexible and elastic—can't crack, chip, buckle, or shrink. Will not melt or get sticky in hottest weather. Cannot dry out, rot or rust. Soft and pliable like a sheet of rubber—clings close and snug to any roof. Snow, rain, wind and sun can't affect it.

Fire-Resisting. Contains no tar or other inflammable material. Spark and fire-brand proof. Insurance companies make same rate as on tin and iron roofs.

Guaranteed. If goods are not exactly as claimed, return them and we will refund your money. Is that plain? Your own judgment tells you we must make and sell you the best roofing to stand that plain guarantee.

Free Book and Samples. Write today for our Roofing Book, Samples and Prices.

McHenry=Millhouse Manufacturing Co.
STA. D, SOUTH BEND, IND.

ceilings and sidewalks, catalogue G to roofing, cornices, skylights, etc. Either one of these catalogues together with interesting prices will be mailed upon application.

Ventilators That Ventilate

Ventilating the modern residential or office building is one of the greatest questions that today confronts the architect or builder. Many devices are now on the market, some of which have merit while others—well—the least said, the better.

The Harris Sash Ventilator solves this problem. This ventilator is installed directly in the window-sash—either lower, upper, or both—the best results being obtained by the use of a ventilator in either sash. It consists of an inside plate with a shutter or door operated by a thumb plate and controlled by a locking bar provided with stops, which hold the shutter in any position, until released by a slight pressure on the locking bar, which extends slightly through the inside plate. On the outer side of the sash there is placed a plate of the same size as the inner plate, but provided only with a fine brass screen.

The points of merit claimed for this ventilator are as follows: 1st. Ventilation is secured with the sash in its proper position and fastened, so that whether the house, building or room is occupied or unoccupied, proper ventilation can be secured without danger from burglars or other intruders, and with no fear of damage caused by wind or rain storms, as the plates are so placed that no storms can affect either ventilators or interior of the building. 2nd. It is a night and day ventilator. 3rd. It is not dust catching, for it has a fine screen which keeps out dust as well as mosquitoes, flies, etc., either large or small. 4th. It is not bulky and unsightly, but neat, effective, and ornamental. 5th. The Harris ventilator is confined closely within the rail and does not interfere with shades or shutter, outside screens or storm sash, neither does it interfere with the raising or lowering of the windows. For the sick room and sleeping room these are an invaluable asset, this being proved by their use in many large hospitals throughout the country.

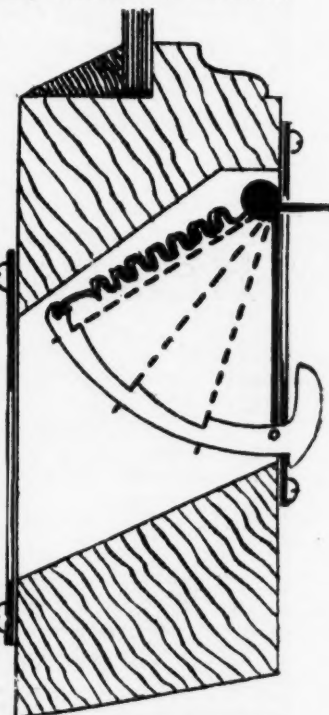
These ventilators be it understood are equally valuable, in the construction of almost any kind of building—the modest bungalow—or the sky-scraping office building—and in the larger buildings where large ventilators are placed on the roof or where ventilating systems are installed, the Harris Ventilator augments the system already in use.

This device is of such practical merit that we are pleased to refer you to their advertisement on another page, in this issue.

Frost Proof Windows

To say that the merchant is "annoyed," "wrathful" or "hot-under-the-collar," when his plate glass store front—which he had just put in at large expense—clouds over with mist and frost on the first cold day, is indeed putting it mildly.

If he should choose to go to the infernal regions for his vocabulary, when speaking of the contractor and his work, we could not blame him; for there is absolutely no excuse now for putting in anything but a perfectly frost proof win-



No. 1



Fire Proof

STANDARD—Lock Joint—METAL SHINGLES
Ornamental, Easily Applied Guaranteed Weather Proof

CANTON MANUFACTURING CO.

We can save you money on
Cornice, Skylights,
Ventilators,
Metal Ceilings,
Roofings, Sidings,
Eave Trough,
Conductor Pipe

No. 2
**Cata-
logue
FREE**

No. 3



**1320 E. 2d
Street
CANTON
OHIO**



Petz
Patent
Store Front
Construction

**Remember this
Name**



MADE IN DETROIT

when specifying store front constructions. It stands for the system that has given the best satisfaction. It has been selected by hundreds of contractors after rigid comparison and investigation, because it offers superior strength, artistic design and finish, economy of room, and ease of installation. Glass sets from outside.

You can see these advantages for yourself, by writing for our booklet "Modern Store Fronts", sent free.

DETROIT SHOW CASE COMPANY
SOLE MAKERS

491 West Fort Street DETROIT, MICH.
For sale by Pittsburg Plate Glass Co., at all branches.



No. 468.—Modern Mission Style 5 feet 11 inches high and 5 feet wide; heavy plan, shelves recessed leather panels; the brackets supporting main shelf are carved with Spanish Insignia. Porian-Vitrea tile hearth and facing. Hand-wrought Andirons of Romanesque design.

Pick Just the Mantel You Want

Here is one of many Lorenzen Mantels. You can take your choice of hundreds of others—Colonial, Craftsman, Early English and period styles in all woods and finishes. You know how much a mantel adds to a room—particularly

LORENZEN MANTELS

They have a distinction of design and workmanship not possessed by any others. Our well-equipped factory, skilled workmen, large stock of air-seasoned lumber of every description, and years of experience making mantels, are a strong guarantee to you of quality and reliability. As for our prices—our immense output enables us to sell close and distance all competition.

Free Catalog—Let us send you the largest and finest catalog of wood mantels ever issued. Each copy costs us nearly \$1. But we send it free to any carpenter or builder. If you don't find what you want in it give us specifications and we will make to your order. Write for the catalog today.

Tiles and Mosaics—We furnish and set all kinds of Tile and Ceramic Mosaic work and will be pleased to submit designs and estimates on application.

Chas. F. Lorenzen & Co.

305 No. ASHLAND AVE., CHICAGO.



There
is the Reason
Why

SIMONDS SAWS ARE THE BEST

THE steel, and the teeth formed from the steel are vital things about a Hand Saw.

All the cutting of a saw is done at the points of the teeth, therefore a saw should be made of material that will hold the tooth points, or, in other words, hold its cutting edge. Simonds Saws are **Made of Simonds Steel** and as a result are superior to other saws. This high grade saw steel will hold a point through hard and continuous service. Buy Simonds Saws if you want the best. You will get the best steel, the best hanging saw, the best value for the money.

When you need saws of any kind let us know and we will send you a free copy of an interesting booklet, "Simonds Carpenter Guide," also the name of Hardware Dealers near you handling our saws.



Look for this trade mark
etched on every saw.

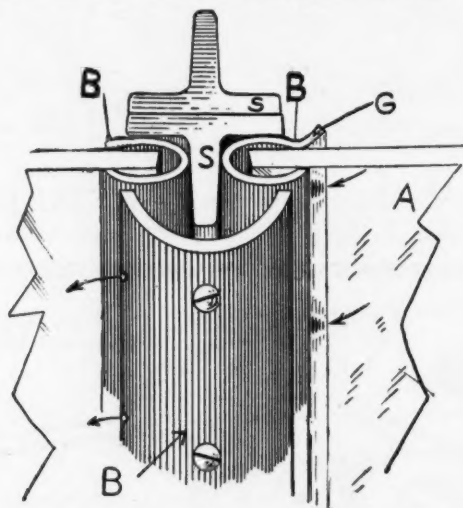
SIMONDS MFG. CO.

Fitchburg, Mass.

Chicago San Francisco Seattle
New York Portland Montreal
New Orleans London, Eng.

dow—now that the Universal Store Front has been perfected and placed on the market by the Voltz Manufacturing Co., of St. Joseph, Mo.

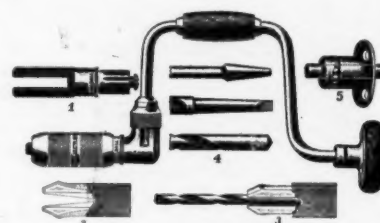
The "Universal" sash bar is radically different from other makes; it works in harmony with natural laws. The edge of the glass is set in a dead air space—not in wood or putty.



This air space keeps the edge of the glass at one temperature, rendering it absolutely frost proof. The "Universal" sash bar holds the glass in a grip of iron, yet with a touch of velvet. The fact is that no wood or putty being inside the sash, the glass has ample room to expand. It is also perfectly rigid. It is durable—will last as long as the building. The voltz free catalogue tells all about it.

The Hold all Chuck

The constantly increasing use among wood workers of twist drills having both straight and bit stock shanks, has created a necessity for a moderate priced chuck that will



hold all varieties of shanks securely and with a reasonable degree of accuracy. The Millers Falls Company has, after a great deal of expensive experimenting, evolved the "Holdall Chuck" which seems

to be nearer perfection than any brace chuck ever produced. It will hold with equal accuracy and tenacity a great variety of shanks. In the illustration:

No. 1. Shows the unbreakable socket made from solid bar steel.

No. 2. The jaws always open exactly parallel unless a tapering shank is to be held, when they adjust themselves exactly to the shape to be used. (See dotted lines).

No. 3. Shows the jaws grasping a $\frac{3}{8}$ in. straight shank twist drill. The chuck will hold straight or taper shanks, round or square, from 7-64 in. to $\frac{1}{2}$ in. in diameter.

No. 4. Shows a few of the variety of shanks this chuck will hold.

No. 5. Shows the Quill with ball bearing.

The "Holdall Brace" is constructed at every point on carefully considered scientific lines and must recommend itself as the most perfect and universal brace on the market. The shape of the nut is new in design and strong in construction and made to fit the hand perfectly. The covered ratchet ring is a feature of the tool. The jaws and ratchet dogs are made from dropped steel forgings.

Every reader of the AMERICAN CARPENTER AND BUILDER

CORTRIGHT SHINGLE

It's A Good Roof *A Lasting Roof*



Every reason for Cortright superiority is a reason you can understand—and appreciate.

The most important point about roofing is the material. After that comes the principle of manufacture. Then the way it is applied to roofs.

Cortright Metal Shingles are made of tin, the material that roofing specialists have unanimously approved the best in the world for roof use. But we don't stop there. Each shingle is either painted by dipping with a specially prepared paint, made from our own formula, or galvanized—dipped into a bath of melted zinc, which increases the durability by 100%

Best Results Follow the Cortright Methods

Reason for manufacturing it in shingles or slates is because it gives results that no other method could possibly give. Directions followed in the beginning gives a roof that will outlast the building and, beyond a coat of paint every five years or so, will never need attention.

It's utterly impossible for Cortright roofing to come off. It's impossible for Cortright roofs to leak. The system of joining and over-lapping prevents both. Every joint and every nail is covered.

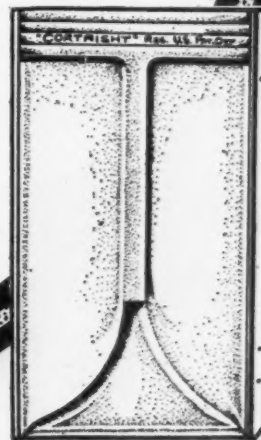
On every genuine Cortright Metal Shingle is stamped the words "Cortright"

Reg. U. S. Pat. Off. Contractors and consumers should look for this, because it is the quality mark of perfect roofing.

Easy to lay, easy to maintain, high quality, low cost, and dozens of other features all making for perfect satisfaction.

IMPORTANT LITERATURE
free on request

Cortright Metal Roofing Co.
Philadelphia Chicago



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



Some Ceiling Facts

Whether you want a ceiling to be fireproof, artistic, sanitary, modern, durable or inexpensive, you cannot possibly do better than use **Eller's Stamped Metal Ceilings** because every one of the above features are embodied.

Every room fitted with this most modern ceiling looks good. Doesn't matter what the shape is. Nook and crook look as good, and are practically as easy to arrange, as a perfectly square ceiling.

In **Eller's Ceilings** the modeler's skill has produced patterns that please the eye and harmonize with the classical arts and make lasting beauty. After the modeler has done his part, the experienced mechanic steps in and brings the manufacturing end to mechanical perfection. The combination produces a ceiling incomparably beautiful, of wonderful durability, and one that is easily fitted.

Eller Steel Ceilings Are the Most Modern, Sanitary and Inexpensive. They Practically Last Forever

Let us figure on your requirements. Give us dimensions and we will give you an estimate on any job in contemplation.

Large splendidly illustrated ceiling catalog sent free.

THE ELLER MANUFACTURING CO.
CANTON, OHIO, U. S. A.

should write this company, Millers Falls, Mass., for prices and full information concerning this tool.

Art in Stained Glass

There has been no diminution in the use of stained glass, although within the past few years there has been a modification as to treatment in this branch of art. Indeed, it is true that there has been more artistic progress during recent years in this line than in any other. Crude and inexperienced, as well as inartistic persons devoid of true feeling for or sympathy with art, makers of bright and inharmonious designs—all these have served their time and are at rest. In their places may be found artists of boundless resources and transcendent skill, not alone in stained glass but in interior decoration as well; the beautiful work executed by the McCully & Miles Company, of Chicago, stands as proof of this.

If it is true, as one of our writers says, that "a civilizing force of the modern world is the growing taste for beautiful things as household possessions," it is equally true that houses cannot be beautifully constructed or appropriately furnished without the use of fine glass for decoration, and a beautiful dwelling is the real exponent of the owner's refined and artistic temperament.

This beautiful home and residence work, together with church work, memorial and ecclesiastical windows, executed by this company, are in the hands of specially trained artists, educated in all branches, who are, indeed, masters of their art. In conclusion, it may be said that they are prepared to submit designs for and make windows embodying all features of correct archaeological and architectural details and true churchly feeling. Their clients being many and varied, it has become necessary for them to be prepared to furnish designs in the style of any of the schools of art. They also restore and repair old windows, sending qualified and experienced workmen to any part of the country for this purpose.

An Improved Steel Square

Sargent and Company, 1149 Leonard street, New York, have perfected and placed upon the market a new improved steel square which will certainly settle that old "bugbear" and puzzle of steel-square framing for good and all, for those progressive builders who are wide awake to the opportunity now presented by this company.

The difference between good and indifferent carpenters' squares lies in something more than excellence of material and workmanship. These features are taken for granted, and are of course among the "Sargent" features. But in addition—the "improved" feature—it contains much valuable information, adding to its efficiency and all 'round usefulness. The latest model "Sargent" has the scales and markings which enable the carpenter to lay out all kinds of work and to calculate quantities with an ease and accuracy never before thought possible.

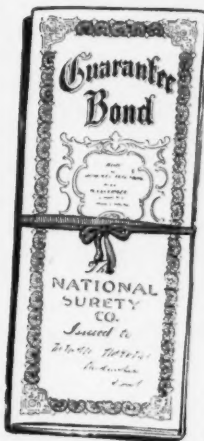
The practical Sargent Standard Steel Square has been the universal favorite wherever steel squares are used. This new model is fully described and explained in a little publication, which has been declared by several recipients to be "a practical treatise on steel square framing." It will be sent free on request to all readers of the AMERICAN CARPENTER AND BUILDER.

Good Business

"Business is booming with us," writes the Montross Metal Shingle Co., of Camden, N. J. "Every month shows a substantial increase over that preceding, and we are far ahead in number of shingles sold at this time last year. This is encouraging, in view of the panic which existed during the first few months of 1908."

The Montross Shingles have been on the market since 1889,

A Guarantee Bond



with Every Roll of **CONGO** "Never-Leak" Roofing

The surety Bond Guarantee back of Congo makes it the most attractive roofing proposition on the market.

We have claimed right along that 3-ply Congo was an unexcelled Ready Roofing at the price, and we now back it by the National Surety Company's Guarantee Bond.

This Bond covers a period of 10 years.

It is broad, liberal protection to the purchaser. It means we have faith in Congo. It protects you absolutely!

A good many roofings carry guarantees of different characters, but not a single one of them gives the purchaser a *Surety Bond*. That's the only kind of guarantee worth having!

We know Congo is the surest protection against weather, climatic changes, heat and cold, for it is absolutely not affected by any of these. It never dries out, cracks or melts, and so perfect a roof protection does it make that it is aptly called the "Never-Leak" Roof. If we were not sure of these facts we wouldn't dare give a Surety Bond with every roll.

Send for a sample and further information to-day.

SPECIAL NOTICE—If any Congo rolls that you purchase do not contain Guarantee Bonds, write us at once, telling us where and from whom they were purchased, and we will at once mail you the missing bonds.

United Roofing & Manufacturing Co.

Successor to BUCHAHAN-FOSTER CO.

555 West End Trust Building, PHILADELPHIA
CHICAGO and SAN FRANCISCO



Edwards
Embossed

METAL CEILINGS

AND

SIDE WALLS

IN addition to being highly ornamental and attractive, metal ceilings and side walls possess many characteristics of a decidedly utilitarian nature which would seem quite sufficient to justify their slight increase in cost over lath and plaster. Closely joined so as to make them easy and economical to install, they present an almost air tight surface, and being incombustible they tend to greatly protect floors and woodwork in case of fire, and have many times by preventing the spread of flames until the arrival of the fire department, saved buildings from destruction. Being of light weight, they reduce to a minimum the strain upon trusses and joists. They neither crack nor fall, as plaster does, nor shrink and dry out, like wood.

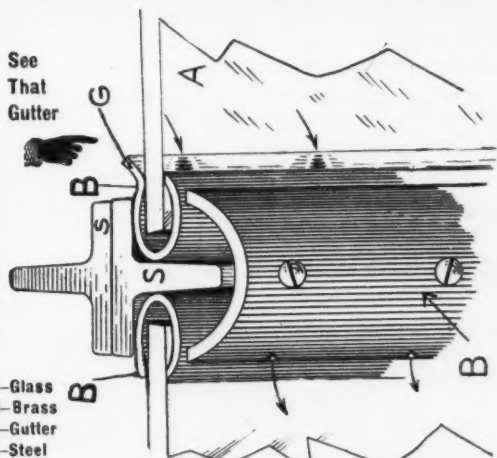
Catalog "A" sent free to those in the market

THE
EDWARDS
MANUFACTURING
CO.

THE SHEET METAL FOLKS"

Main Office and Works, 401 to 417 Eggleston Ave.,
CINCINNATI, U. S. A.

Universal Store Front Construction



TRANSOM BAR No. 9

The Standard Store Front Construction of the World

THE EDGE of the glass is set in a dead air space—not in wood or putty. This air space keeps the edge of the glass at one temperature and therefore renders it absolutely frost proof. The "Universal" sash bar holds the glass in a grip of iron yet with a touch of velvet. Fact is, no wood or putty being inside the sash, the glass has ample room to expand. Of course it is held perfectly rigid—just as much in the center as at the ends.

Glass Held Perfectly Rigid

Suitable for any angle while it easily supersedes other makes when used for circles or domes. Sash for the last two are not forged but rolled and are guaranteed true to any given radius.

Durable? They will last as long as the building.
You are told everything in our catalog. It's Free.

Voltz Manufacturing Co.,

1101-1103 S. 8th

ST. JOSEPH, MO.



WRITE to us for preliminary opinions on all legal matters. No charge unless retained. Associates throughout Continental Europe, Great Britain, the Colonies, South America and Canada enable us to investigate and prosecute foreign interests with dispatch. Our Pamphlet for the Asking.

THE INDUSTRIAL LAW LEAGUE, Inc., 170 Broadway, New York City, New York

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

The WINTHROP

Asphalt Shingle

↙ A SOLID TAPERED

Asphalt Shingle

All the durability of asphalt, the appearance of slate, the light weight and low cost of wood shingles.

COOL, GRAY, SLATE COLOR

Indestructible as an Asphalt Pavement

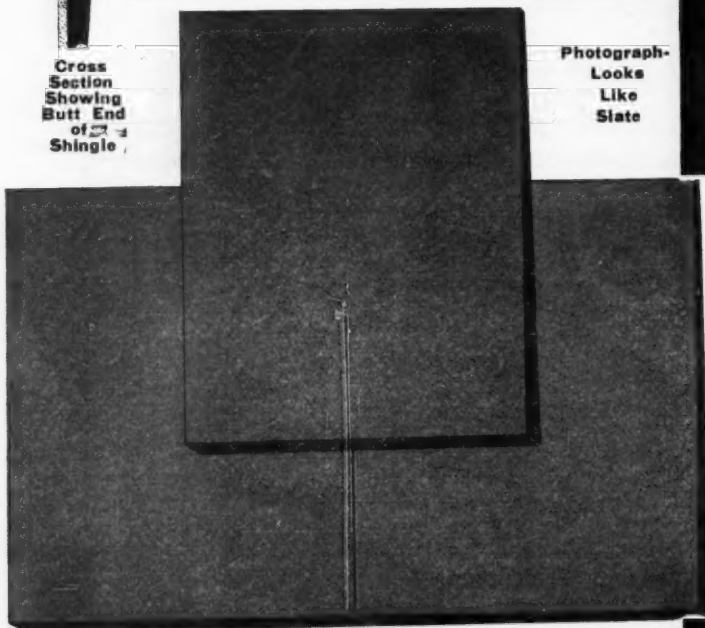
Not another roofing in existence can show such real advantage. None can offer such material—such wearing qualities at such a price.

Winthrop Asphalt Shingles have the appearance and durability of slate, are lighter in weight, less trouble to lay, cost much less and never require painting. Never leak, crack, break, or fall off.

No Cement or Dope Required to Lay These Shingles

Cross
Section
Showing
Butt End
of Shingle

Photograph
Looks
Like
Slate



CONTRACTORS! BUILDERS! OWNERS!

This is a Residence Roofing, Can be Applied on a Building at about the Cost of Wood Shingles.

Winthrop Asphalt Shingles are laid with regular shingle nails the same as wood shingles, they are fire-resisting, weather proof, wind and sun proof and are the best substitute for slate, wood or metal.

SPECIAL INDUCEMENTS OFFERED FOR APPLYING FIRST ROOF OF THESE SHINGLES IN EACH TOWN.

Write to-day for Free Booklet

WINTHROP ASPHALT SHINGLE CO. 1102 Womens Temple CHICAGO.

and have become so well and favorably known to the trade, and builders in general, that they stand a better chance of keeping busy during dull times than some of their younger competitors. Again, this firm is placing a larger variety of designs on the market than anyone else. This, together with the exceptional merits of the shingles themselves, as demonstrated in the past, has undoubtedly enabled the manufacturers to reap the present harvest, while so many are complaining.

Low Priced Roofs

Some ready roofings have so little protective quality of their own that they require painting every year, although there are better grades which can be left as long as three years without this protection.

The cheapest way out of the difficulty is to buy a roofing which needs no painting whatever. Such a roofing is Amatite, which our readers will find frequently advertised in these columns.

The mineral surface of this material scorns the protection of paint and faces the weather boldly. Rain, snow and wind have no effect whatever upon it, and it will give good service year after year in the most extreme exposures without any care or attention.

A sample of Amatite can be obtained by requesting same on a postal card addressed to the nearest office of the Barrett Manufacturing Company, New York, Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburg, Cincinnati, Kansas City, Minneapolis, New Orleans.

Profit by Experience of Others

Experience is wisdom, but we usually pay for the teaching. Why not profit by the experience of others and thereby save all unnecessary expense as well as investigation. The opinions of disinterested persons have more weight than the statements of a manufacturer, for it is but natural that the latter should praise his own productions, while the former only do so when circumstances warrant it.

Unsolicited testimonials such as in the possession of Jos. Miotke regarding his Acme floor scraping outfit are worthy of consideration, for they are the candid expressions of satisfied users and not "paid for" letters such as sometimes appear in advertising circulars.

The Acme floor scraping outfit is sold strictly on its merit and this company is ready to ship the same to any responsible party on a week's free trial. They make this offer so that every carpenter or contractor can fully satisfy himself as to what the machines are and what they will do, before he spends his money.

Are you willing to investigate? Jos. Miotke is ready to ship the outfit at once, so send in your trial order now to 247 Lake street, Milwaukee, Wis.

Slaters' Tools

Every contractor should have a set of Belden's handy, practical slaters' tools. Their reputation for increasing the efficiency of their users, and for saving time and money, is international. Unquestioned superiority lies in the fact that they are made on advanced principles from the very best quality of materials. A "special analysis" steel is used in their manufacture, adopted after years of experience and experimenting.

The set is composed of a hammer, ripper, stake and punch. The hammer, which is also a combination punch, dresser and claw, is drop forged throughout, finished and tempered by skilled and experienced workmen. It is provided with an indestructible leather handle that will not slip from the fingers, neither will it wear blisters on the hand of the user.

Rippers and stakes are strong, practical and durable, and are made entirely of drop forged steel. For years they have



FLOOR FINISH

is a TRIUMPH OF THE VARNISH MAKING ART

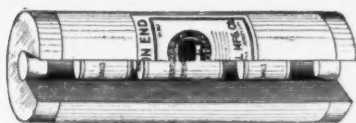
No other Floor Varnish or Floor Finish of a varnish nature is so tough, so elastic or so durable. It produces a smooth, handsome gloss finish unaffected by water or atmospheric conditions. It will not crack, chip or mark white.

If you are interested in a high-class article for floor work—a finish that is made to walk on and to stand the severe wear to which floors are subjected, write us for further information.

Our New Catalogue "D" listing our complete lines of "Nice" Varnishes, Fillers, Paints, Stains, Enamels, Colors, etc., will be ready very soon. We wish to send it to every reader of this paper who will write for it.

EUGENE E. NICE

272-274 So. 2nd St. PHILADELPHIA
201-3-3-7 Spruce St.



Here's the Roofing You Ought to Use

Just as ready roofing has demonstrated its superiority over shingle, slate and tin roofs, so has MONARCH Asphalt Roofing conclusively proven its superiority over the usual ready roofing.

Genuine asphalt is acknowledged to be the most satisfactory roofing saturation and coating so far known. We use genuine Pitch Lake Trinidad Asphalt and all wool felt in the manufacture of MONARCH, and our method of applying the asphalt saturation, coating and mineral surfacing makes MONARCH a solid and perfectly combined whole—impervious to water and proof against flying fire-brands.

Know what you are buying—there is no substitute for genuine asphalt roofing. Send for Sample Set M-2.

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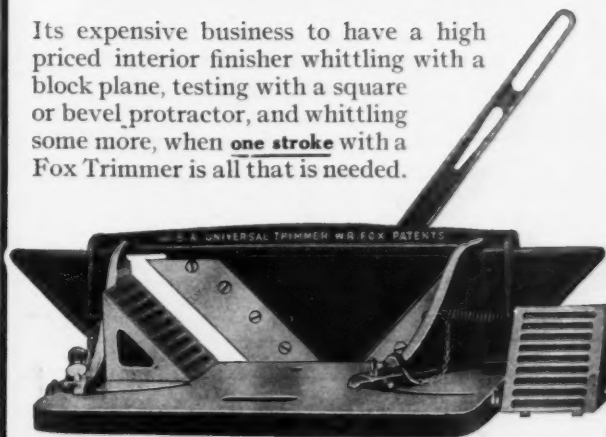
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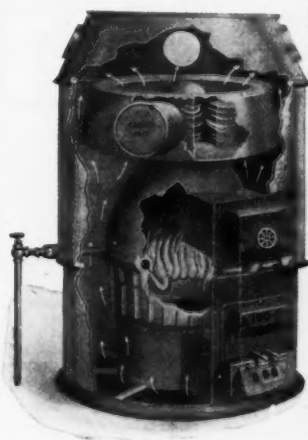


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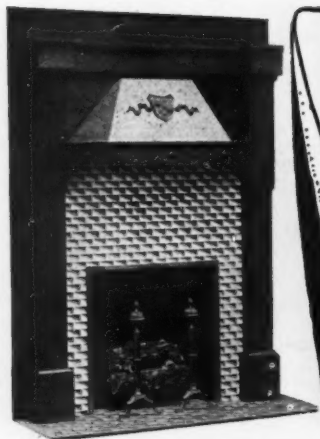
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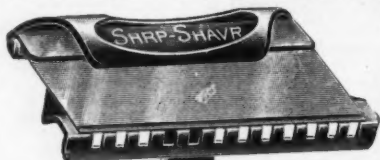
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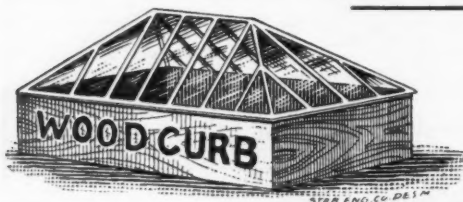
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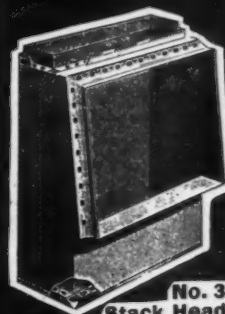


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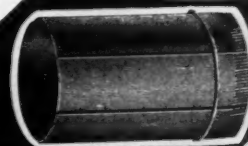
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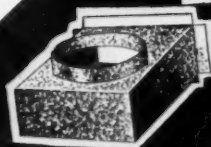
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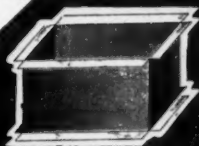
No. 3
Stack Head
for First Floor with
Collar for Extension
to Second Floor



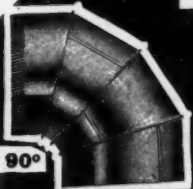
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Air Supply Stub No.
2 for Metal Pipe

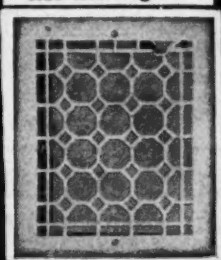


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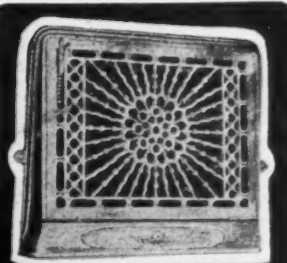
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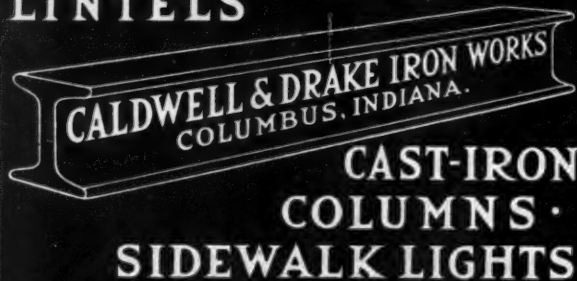


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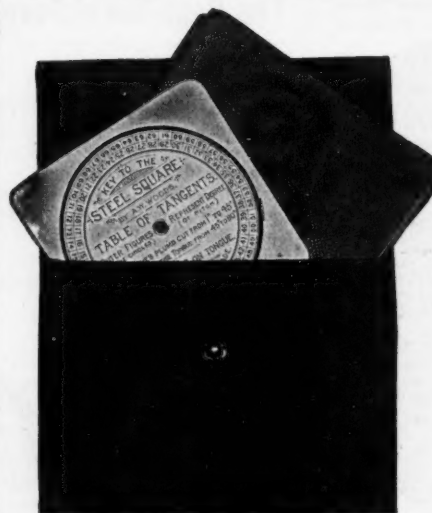
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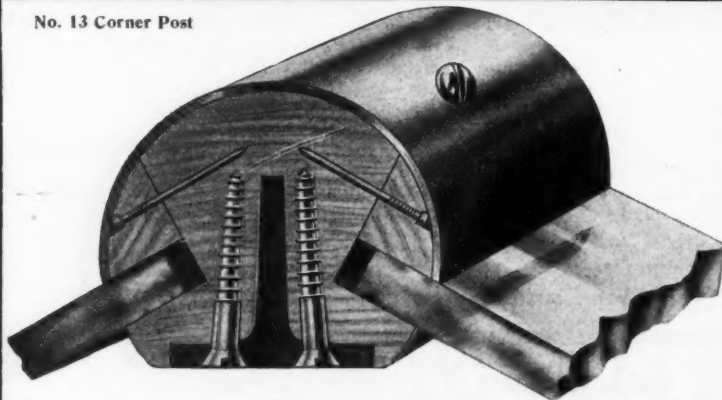
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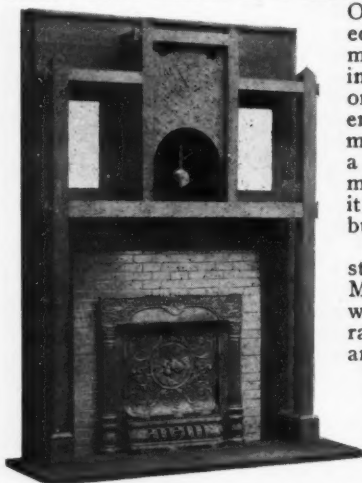


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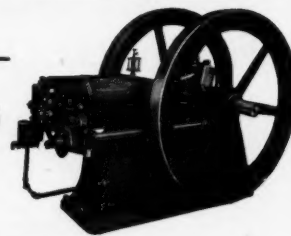
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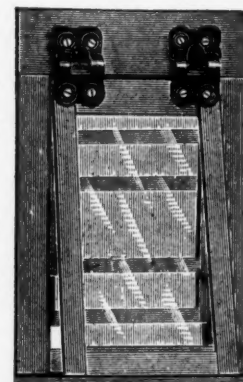
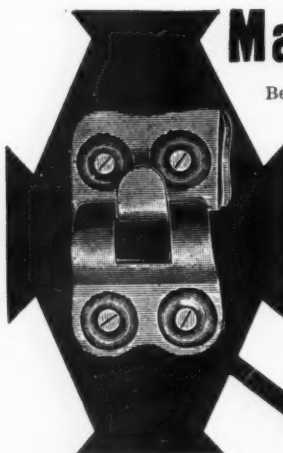
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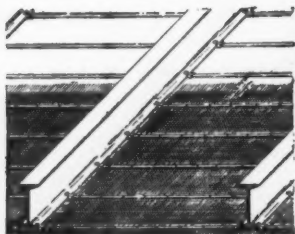
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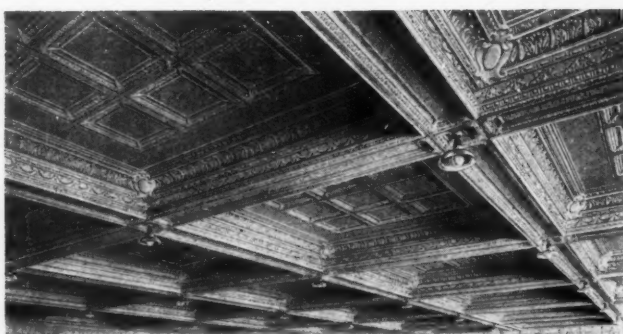
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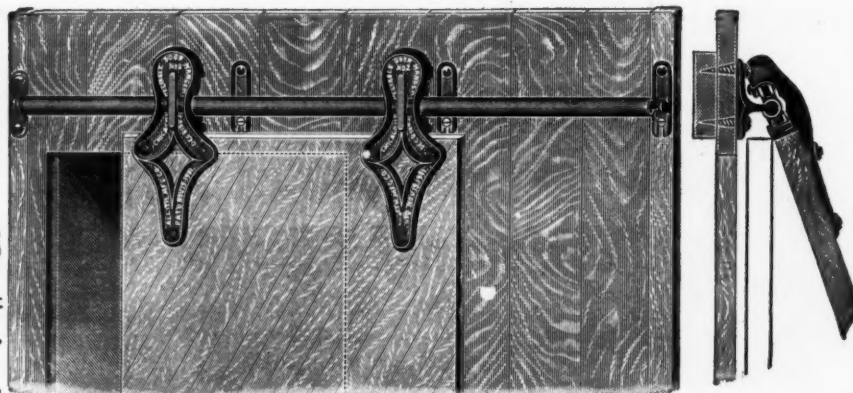
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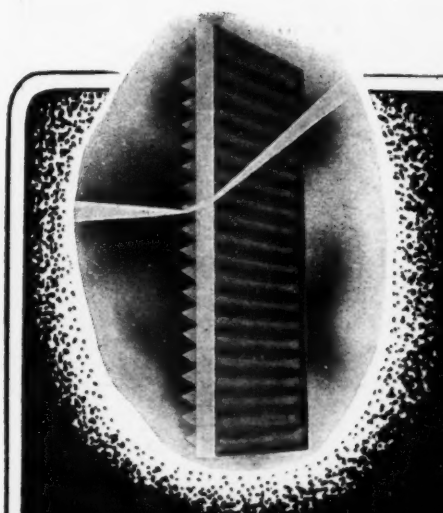
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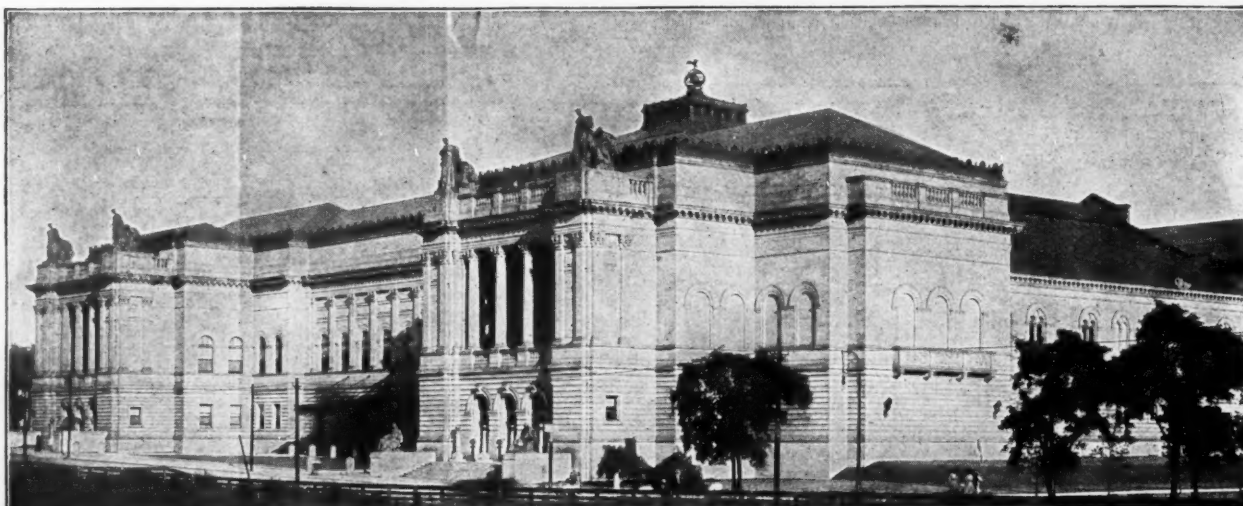
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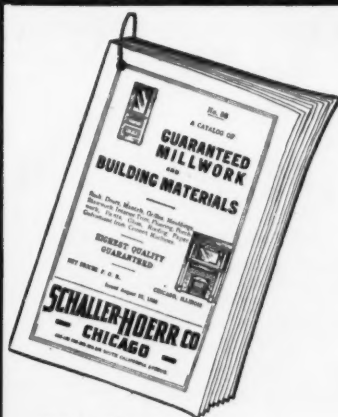
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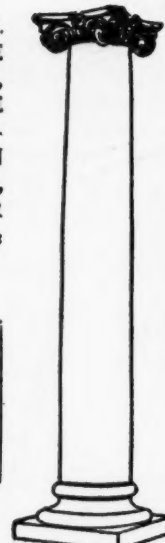
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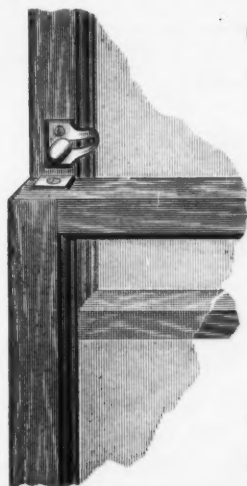
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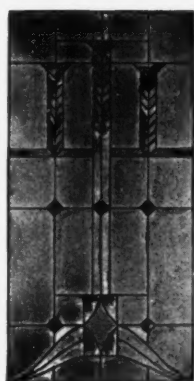
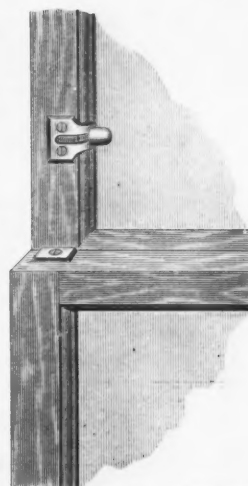
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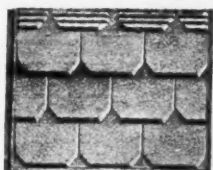


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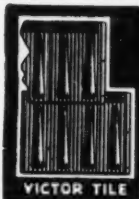
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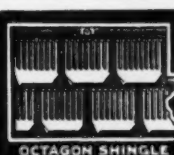
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EASTLAKE SHINGLE



GOTHIC TILE

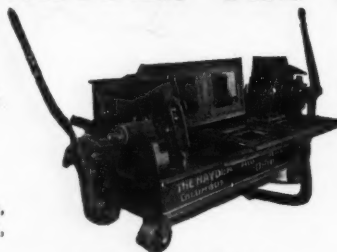
MONTROSS METAL SHINGLE CO. CAMDEN, N. J.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

**STRENGTH
RAPIDITY
DOWN FACE**

MAKES

Angles, Circles,
Water Tables,
Bevel Rock
Smooth Bevel,
Sharp Rock,
Flat Rock
Broken Ashler,
Belt Course,
Bush Hammered,
Cornice,
Fancy.



The Hayden Machine
Two Sizes—24-inch and 32-inch.

New York and Foreign Representative

H. W. REMINGTON,
19 South Street New York, N. Y.

HAYDEN THE STANDARD OF MERIT

**LARGE RANGE
SIMPLICITY
EASE OF OPERATION**

The only Block Machine on the Market strong enough to withstand, year after year, the heavy strain of Power Tamping.



The Hayden Trowel
Made specially for the Concrete Block Maker.
Send for Circular.

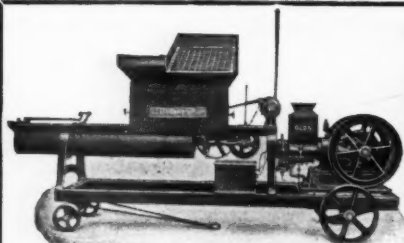
THE HAYDEN AUTOMATIC BLOCK MACHINE COMPANY

Manufacturers of

HIGH GRADE CONCRETE BLOCK MACHINES, MIXERS, PORCH COLUMN
MOULDS, TROWELS, ETC.

112 West Broad Street

COLUMBUS, OHIO



**The U. S.
Standard
Concrete
Mixer**

CLAIMS

1. To mix as well as the best.
2. To divide the different ingredients more reliably into any desired proportion.
3. To measure the ingredients more accurately than any known mixer.

**The U. S. Standard Cement Block
Machine Claims Superiority**

1. For accuracy and perfection in construction.
2. For adaptability to an almost endless variety of blocks.
3. For strength and beauty of blocks.
4. For speed.
5. For moderation in price.

Manufactured by
**THE ASHLAND STEEL
RANGE & MFG. CO.**
Ashland, Ohio

Government and Foreign
Sales Department, B-21, Pro-
duce Exchange, New York,
U. S. A.

Catalogue A sent free
upon application.



"TRUS-CON" JOIST HANGERS

Strongest

as shown by
University Tests.

Made from OPEN
HEARTH STEEL.

SAVES cutting and weaken-
ing of timber.

SAVES labor in installation.

LOWEST FIRST COST.

All styles and sizes for Brick
and Concrete Walls, Steel and
Wooden Beams.



**WRITE TODAY FOR PRICES
TO SPECIALTY DEPT.**

TRUSSED CONCRETE STEEL CO.

624 Trussed Concrete Bldg., DETROIT, MICH.

"BRADFORD PRESSED BRICK" "BRADFORD REDS"

Trade-Mark—Sept. 12, 1905—July 15, 1907



Size 2 3/4"x4"x8 1/4"

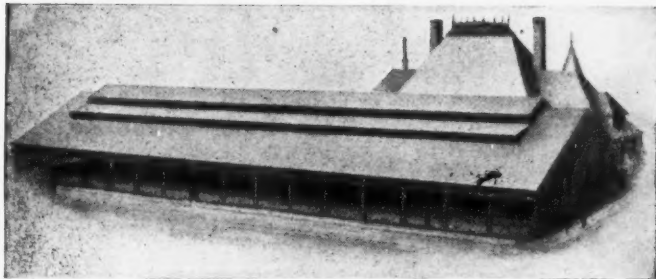
Positively Unequalled for Richness of Color
Perfection of Shading and Uniformity of Size

MANUFACTURED EXCLUSIVELY BY

Bradford PRESSED Brick Company
BRADFORD, PA.

Standards, Romans, Moulded and Ornamentals
Selected Brick for Mantels

FLINT-COAT ROOFING



UNION DEPOT, DULUTH, MINN.
Rock Asphalt Roofing Stands the Test on this Monster Roof

*The Best Roofing
On Earth*

That's All We Claim

Every Roll Guaranteed

Perfect

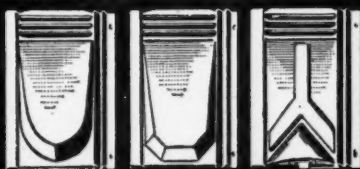
You Will Save 25 to 50 Per Cent

1-ply Flint Coat Roofing.....	\$1.25	1-ply Rubber Roofing	\$1.25
2-ply Flint Coat Roofing.....	1.50	2-ply Rubber Roofing	1.45
3-ply Flint Coat Roofing.....	1.75	3-ply Rubber Roofing	2.00
4-ply Flint Coat Roofing.....	2.10	5-ply Rock Asphalt Roof.....	2.20

IMPERVIOUS BURLAP, ASPHALT, READY ROCK ROOFING, \$2.75

Above prices are for one roll of 108 square feet, F. O. B. Chicago, all ready to lay. Can be laid by anyone. Special prices quoted west of Mississippi River. Nails and Cement with each roll. Our roofing costs less than shingles; lasts longer; can't rust like iron or steel. **Water, Wind, Hail, and Fire Proof.** Recommended by leading architects, largest railroad companies and corporations in Northwest. Samples and Booklets **FREE**.

ROCK ASPHALT ROOFING CO., Room 1105 Y. M. C. A. Building, CHICAGO



SHINGLES THAT LAST

The National Sheet Metal Roofing Co.

Rain proof Durable SHINGLES JERSEY CITY N.J. WALTER'S Rust proof Ornamental TILES
Write for Catalogue, Samples and Prices

Send 48c for a 4 lb. Sample Package of R. O. U. WATERPROOFING

If, after you have tried it, you do not agree with us that this is the most important new development in the great concrete industry, and that you are not satisfied with results, we will refund the amount paid.

Efflorescence and the damp appearance on the outside after rain is now the last objection that the most captious critic can make against concrete block and brick buildings. R. O. U. absolutely prevents both. Do not take our word for it. Try it yourself. Unless you are convinced and satisfied the loss is ours.

Let us send you report of the test of R. O. U. made by the Engineering Department of Iowa State College at Ames, Iowa.

We are getting repeat orders wherever R. O. U. is tried. Here is one man that tried it:



50 LBS. FOR TRIAL

LEMMON, S. D., JUNE 12, 1908.
MIRACLE PRESSED STONE CO.,
Gentlemen: Please ship us 1-50 lb.
sack R. O. U. Waterproofing.
Lemmon PRESSED Stone Co.

1000 LBS. A MONTH LATER

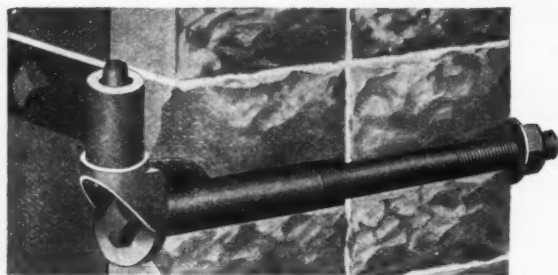
LEMMON, S. D., JULY 15, 1908.
Gentlemen: Please ship us 1000 lbs.
R. O. U. Waterproofing.
Lemmon PRESSED Stone Co.

It is a great advantage to the concrete worker, and even more to the concrete building owner.

Miracle PRESSED Stone Co.,

MINNEAPOLIS, MINN.

The Largest Manufacturers of Concrete Machinery in the World.



THE OLD RELIABLE

Zimmermann's Anti-Sag Strap Hinge

HIGHEST AWARD JAMESTOWN EXPOSITION

Cannot sag or twist—easily attached to Wood, Brick, Stone or Cement by standard bolt or lag screw.

For use on Heavy Barn Doors, Gates, Fire Doors, Fire Shutters—every place where a perfect hinge is desired to carry a heavy load without sagging or breaking down.

Made in 22 sizes, from six inches up to six feet. The strongest hinge ever offered to the trade—stays where put. Far superior to hinge made by blacksmith and at one-half the expense.

ASK YOUR JOBBER OR WRITE US

HARRY ZIMMERMAN & CO., Patentees, = **25 Wood Street, Fremont, Ohio**
 Eastern Selling Agents, **G. F. S. ZIMMERMAN & CO., 4 Arch Street, Frederick, Md.**



The
Miles
Improved
Block
Machines

Make the Best Blocks

Face Down, Automatic End Gates, One Size Pallet, Adjustable, Wet Mix used. Get our New Prices.

THE MILES MANUFACTURING COMPANY, Inc.
 109 W. Cortland St. JACKSON, MICH.

NEW 1908 LIGHTNING Block Machine

Makes 400 or More Concrete Blocks Per Day
 Automatic Self Locking Doors

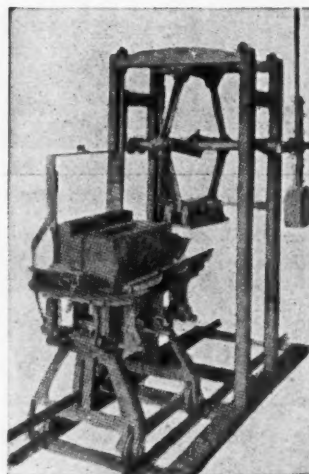
The cleanest, quickest and simplest machine on the market.
 All working parts protected from dropping cement.

The price is the most interesting thing about it—suits everybody.

Write for Illustrated Circular
 Detrick Concrete Machine Co.
 14 and 16 South Canal St.
 Dayton, Ohio



"SOMERS" PRESSURE Block Machines



Chief Features are

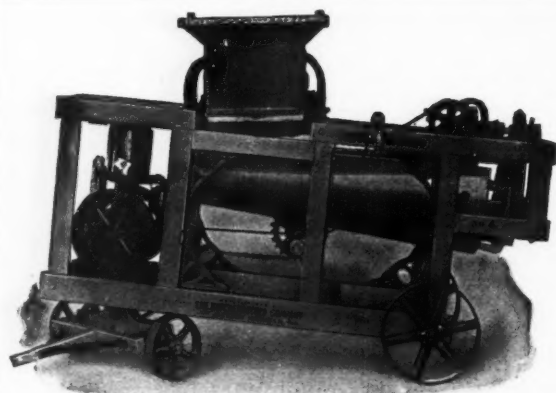
The enormous pressure of 30 tons which creates a Dense, Compact Block and

Our Guarantee

That 3 men can make two perfect blocks per minute on this machine, and by adding two molds its capacity can be doubled.

Fully described in illustrated catalog.

SOMERS BROS., Mfrs.
URBANA, ILLINOIS



"I Think the Coltrin is the Best Mixer I Have Seen"

Beloit, Kan., May 24, 1908.

The Knickerbocker Co., Jackson, Mich.

Gentlemen: I am well pleased with your No. 6 Coltrin Mixer you shipped me April 7th, and if you have any prospective buyer in this part of Kansas that you cannot deal with unless he sees the mixer work, you just send him to me. If I cannot make a sale for you, then the man does not want a mixer, for I think the Coltrin is the best mixer that I have seen.

Yours truly,

J. W. TRON.

The Coltrin Concrete Mixer

Manufactured By

The Knickerbocker Company

Jackson

Michigan

Don't! Tamp Your Life Away " " Money "

WHY?

Make 100 Strokes to produce a block
Make 100 Blocks a day

WHEN

You can produce a block with one stroke
You can make 2000 Blocks a day on
a machine that don't cost any more.

We could not show cut of Multiplex here and do it justice. But our catalog "R" illustrates and explains it in every detail.

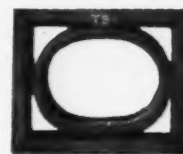
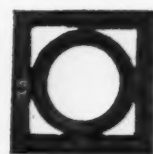
You can make all styles and sizes as well as chimney block on the one machine.

These statements are not advertising statements, we can prove it. Write

for catalog "R" and you will readily see the reason. Our chimney block is the only one of its kind.

THE MULTIPLEX CONCRETE MACHINE CO.

744 Ohio Building
TOLEDO, OHIO.



CONCRETE ORNAMENTS

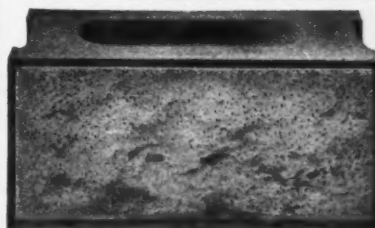
THE greatest opportunity in the concrete business is right here. With Medina Molds contractors can make a great variety of always-in-demand ornaments, that sell for profitable prices.

Letters from hundreds of pleased users prove every claim we make. "Good sellers with good profits," "Vases sell as fast as I can make them," "Vases sell at first sight," are examples of what users are continually saying.

Cost of outfit is very low. Send for catalog showing full line.

Medina Concrete Company
30 Court Street, - Medina, Ohio

\$12.—COMPLETE 8x8x16 BLOCK OUTFIT



rock and plain face blocks, half blocks and gable blocks for the net sum of \$12.00. Note cut of block that was made with this machine. We can also furnish you a block machine at a higher price, but it will be in accordance with the price. We guarantee all our tools, give five days trial, money back if they are not what we claim for them. Can anyone do any more? We could not do this if our tools were not "A No. 1" and backed by our statement. Write for catalog No. 6-D today. This year's catalog will soon be all gone.

BURRELL MFG. CO., 106 Grove St., Bradley, Ill.

We meet all competition with our X-L-ALL cement tools with our years of experience together with our well equipped factory and up-to-date methods of manufacturing. We are able to meet any competition, whether it be a mail order house, a manufacturer or a tinker. We can fill your wants at a better price with equal goods. Now, understand us we can furnish you a complete machine to make 8x8x16 blocks for the net sum of \$12.00. We can also furnish you a block machine at a higher price, but it will be in accordance with the price. We guarantee all our tools, give five days trial, money back if they are not what we claim for them. Can anyone do any more? We could not do this if our tools were not "A No. 1" and backed by our statement. Write for catalog No. 6-D today. This year's catalog will soon be all gone.



A Roll
Ready for Use

Union Fibre Co., 72 Fibre Ave., Winona, Minn.

Dear Sirs: Send Samples and Specifications (for sheathing and sound-deadener) of the new linen building felt—LINO FELT—"38 times as effective as BUILDING Paper."

(Sign your name and let us prove it to you.)

LINO FELT is Made by the Makers of "LITH"—the Cold Storage and Refrigerator Insulation

Not Expensive

500 Million Yards in Use
Adds less than 1 per cent to cost of buildings.

The Philip Carey Company
Distributors,
Cincinnati

Branches & Warehouses
in all large cities in the
U. S., Canada and Mexico



EUGENE DIETZGEN CO.

NEW YORK
SAN FRANCISCO

181 Monroe Street, CHICAGO

NEW ORLEANS
TORONTO

DRAWING MATERIAL

Drawing Instruments, Drawing Paper, Blue Print Paper, Tracing Cloth Builders' Levels
Everything for Drafting and Surveying. Send for catalogue A

Standard Concrete Machinery



Made in 4 sizes—5, 10, 20 and 40.

THE STANDARD CEMENT BRICK MACHINE

Is the fastest Hand Brick Machine on the Market; will make plain, veneered and ornamental face and shape; all perfect, smooth brick, true to size and design.

THE STANDARD GAS and GASOLINE ENGINE

Is made in all sizes. Especially adapted to running concrete machinery.

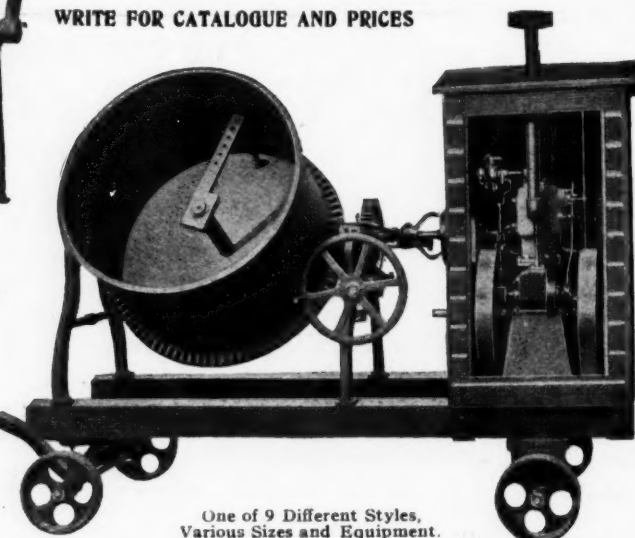
THE STANDARD CONCRETE MIXER

Handles wet or dry mix; requires little power to operate; mixes bath perfectly in one minute; self-cleaning; easily charged and dumped: 3 sizes.

THE STANDARD PORTABLE MIXER and ENGINE

Are mounted on suitable truck; well designed; convenient to operate.

WRITE FOR CATALOGUE AND PRICES



One of 9 Different Styles,
Various Sizes and Equipment.

GENERAL SALES OFFICE,
108 La Salle Street,
CHICAGO, ILL.

South Bend Machine Mfg. Co.,



Price

\$40.00

A PERFECT BLOCK TURNED OUT EVERY TWO MINUTES OF THE WORKING DAY

No Chipped Edges. No Cracked Blocks. A perfect crystallization, owing to the wet mixture used, producing a hard, dense and non-absorbent block. This machine makes profits—builds a substantial business—makes satisfied customers for you.

THE DUNN COMBINATION CEMENT BLOCK MACHINE

is built to give all these results, and the hundreds of cement block manufacturers using the Dunn Combination Cement Block Machine prove it.

It makes Face Down, Side Face Two-Piece Wall and Veneer construction. The efficiency of the machine is increased more than three times by these interchangeable features. There is no limit to size, number of shapes or variety of designs. Wood pallets are used. But you don't have to take our word for it before you buy it. You can prove these facts to yourself on the machine in your own home town. The machine will stand on its own merits. That's probably the way you would like to buy a machine. That's the way we are willing to sell it to you.

Send for our illustrated catalog. It shows what the machine is and just how it works.

W. E. DUNN & Co., 341 Grand Ave., Chicago, Illinois

Wet Process Concrete Blocks

By the Pettyjohn System

The manufacturing of Concrete Blocks is rapidly nearing perfection, but the up-to-date manufacturer must use modern machinery and employ improved methods. Three features are important in perfect block making:

WET PROCESS

FACE DOWN

DAMP CURING

These splendid features are combined in the new Pettyjohn Invincible Machine, and no other. Made in three lengths, 16-inch, 24-inch and 40-inch. Tandem Invincible makes two blocks at once. Price \$65 and up. Single Invincibles, \$35 and up. Sold on trial always guaranteed to give satisfaction or money refunded.

With our TRIPLE TIER RACKING SYSTEM green blocks can be stacked three high direct from machine with inexpensive home-made rigging. This economizes space, reduces off-bearing distance, and above all insures slow, even, damp, perfect curing and bleaching. Plans and blue prints free to customers.

Send for our latest edition of "Stone Making" (just published), a book of valuable data for the block maker—FREE.

THE PETTYJOHN COMPANY, - - - 634 No. Sixth St., Terre Haute, Ind.

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Allith Manufacturing Co.	104	Fox Manufacturing Co.	3	Nicholls Manufacturing Co.	10
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		Hess Warming & Ventilating Co.	99	Phillips Co., A. J.	9
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Barrett Manufacturing Co.	82	Hotel Windsor	17	Prentiss Vise Co.	22
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New copy, changes and corrections for advertisements must reach office of American Carpenter and Builder, 185 Jackson Boulevard, Chicago, not later than October 20 in order to insure insertion in November number.

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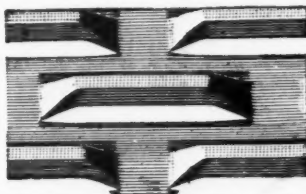
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We make two kinds—Sykes Expanded Cup Lath, and Sykes Trough Lath. Both are supreme for their own purpose.

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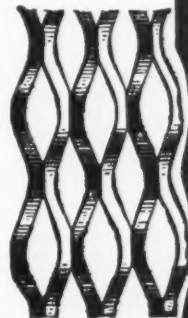
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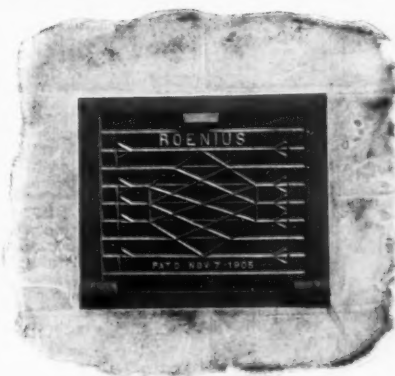


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